W912WJ-05-B-0005

US Army Corps
of Engineers ®
New England District

Modify Spillway
Otter Brook Lake

Keene, New Hampshire

Construction Solicitation
And Specifications

March 2005

MODIFY SPILLWAY
OTTER BROOK LAKE
KEENE, NH

DESIGN AUTHENTICATION

Technical Lead

for ANTHONY T. MACKOS, P.E.
Chief, Design Branch

RAIMO LIIAS, P.G.
Chief, HTRW/Geotechnical Engineering Branch

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Deputy Chief, Engineering, Planning Division

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Chief, Engineering/Planning Branch

This project was designed for/by the New England District of the U.S. Army Corps of Engineers. The initials or signatures and registration designations of individuals appear on these project documents within the scope of their employment as required by ER1110-1-8152.

SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W912WJ-05-B-0005	2. TYPE OF SOLICITATION [X] SEALED BID (IFB) [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 14-Mar-2005	PAGE OF PAGES 1 OF 22

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W13G86-5020-9505	6. PROJECT NO.

7. ISSUED BY CODE W912WJ	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
U S ARMY ENGR DISTRICT, NEW ENGLAND 696 VIRGINIA RD CONCORD MA 01742-2751 TEL: FAX: 978-318-8207	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)*
	SHEILA M WINSTONVINCUILLA	978-318-8159

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

SPECIFICATIONS ENTITLED "MODIFY SPILLWAY, OTTER BROOK LAKE, KEENE NEW HAMPSHIRE"

DRAWINGS AS LISTED IN PARAGRAPH ENEITLED "CONTRACT DRAWINGS AND SPECIFICATIONS" OF SECTION 00800, SPECIAL CONTRACT REQUIREMENTS.

SECTION 00700, CONTRACT CLAUSES, AND SECTION 00800, SPECIAL CONTRACT REQUIREMENTS.

THIS SOLICITATION IS UNRESTRICTED PURSUANT TO PUBLIC LAW 100-656, SMALL BUSINESS COMPETITIVENESS DEMONSTRATION PROGRA

NOTE TO BIDDERS: Please pay special attention to Section 00600, Contract Clause 52.204-8, Annual Representations and Certifications (Jan 2005). All bidders must complete the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov . Please ensure your firm is registered in the Contractor Central Registration (CCR) database prior to completing the ORCA requirements.

The applicable NAICS Code and Size Standard for this procurement are as follows:

NAICS Code: 237310
Size Standard: $28.5M

11. The Contractor shall begin performance within 15 calendar days and complete it within 330 calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* Sect 00800 1.1 *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 2 copies to perform the work required are due at the place specified in Item 8 by 02:00 PM *(hour)* local time 13 Apr 2005 *(date).* If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER ***(Must be fully completed by offeror)***

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NO. *(Include area code)*
	16. REMITTANCE ADDRESS *(Include only if different than Item 14)* **See Item 14**
CODE / FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD ***(To be completed by Government)***

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY: CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _____ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.

☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*	31A. NAME OF CONTRACTING OFFICER *(Type or print)*
	TEL: EMAIL:
30B. SIGNATURE / 30C. DATE	31B. UNITED STATES OF AMERICA BY / 31C. AWARD DATE

Section 00010 - Solicitation Contract Form

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	MOBILIZATION AND DEMOBILIZATION	1	Lump Sum	$_____	$_____
0002	EARTH EXCAVATION	3,000	Cubic Yard	$_____	$_____
0003	ROCK EXCAVATION	8,000	Cubic Yard	$_____	$_____
0004	DIKE CONSTRUCTION	1	Lump Sum	$_____	$_____
0005	CONCRETE DEMOLITION & DISPOSAL	1	Lump Sum	$_____	$_____
0006	CONSTRUCTION OF CONCRETE SPILLWAY SILL AND ABUTMENTS	1	Lump Sum	$_____	$_____
0007	CONSTRUCTION OF FUSEGATES (FUSEGATE MODULES MAY BE CAST-IN-PLACE OR PRECAST, AT THE CONTRACTOR'S OPTION.)	1	Lump Sum	$_____	$_____
0008	FUSEGATE WEIGHING AND TESTING	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0009	FUSEGATE BALLAST CONCRETE	98	Cubic Yard	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0010	WETLANDS MITIGATION AREA	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0011	BITUMINOUS CONCRETE PAVEMENT	1	Lump Sum	$_____	$_____

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0012	TOPSOIL AND SEEDING	1	Lump Sum	$_____	$_____

TOTAL ESTIMATED AMOUNT: $_____

Section 00100 - Bidding Schedule/Instructions to Bidders

CLAUSES INCORPORATED BY REFERENCE

52.214-3	Amendments To Invitations For Bids	DEC 1989
52.214-4	False Statements In Bids	APR 1984
52.214-5	Submission Of Bids	MAR 1997
52.214-6	Explanation To Prospective Bidders	APR 1984
52.214-7	Late Submissions, Modifications, and Withdrawals of Bids	NOV 1999
52.214-18	Preparation of Bids-Construction	APR 1984
52.214-19	Contract Award-Sealed Bidding-Construction	AUG 1996
52.225-10	Notice of Buy American Act Requirement--Construction Materials	MAY 2002
52.232-38	Submission of Electronic Funds Transfer Information with Offer	MAY 1999

CLAUSES INCORPORATED BY FULL TEXT

52.003-4002 BIDS RECEIVING DESK

Bids, if submitted in person or by messenger, shall be delivered to the Bids Receiving Desk (so identified), Building 1, Contracts Branch, Contracting Division, at the above address, prior to the time fixed for opening of bids. Bidders who attend the bid opening may deliver bids directly to the Contracting Officer in the New Hampshire Conference Room.

52.003-4014 INQUIRIES

Telephone inquiries relating to this solicitation should be directed as follows:

New England District, Corps of Engineers
Procurement of Plans and Specifications,
Prospective Bidders List, Bid Results,
and Award Information 978/318-8420

Technical Inquiries on Plans and
Specifications 978/318-8129
978/318-8112

52.003-4015 MAGNITUDE OF PROJECT

The estimated cost of the work is$1,000,000.00 to $5,000,000.00.

52.003-4021 PLACE OF BID OPENING

Bids will be publicly opened at the appointed time at the U. S. Army Engineer District, New England, 696 Virginia Road, Concord, MA 01742-2751, in the New Hampshire Conference Room.

52.216-1 TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a firm-fixed-price contract resulting from this solicitation.

(End of clause)

52.233-2 SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO), shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from the Contracting Officer, U.S. Army Engineer District, New England, 696 Virginia Road, Concord, MA 01742-2751.

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

(End of provision)

52.236-27 SITE VISIT (CONSTRUCTION) (FEB 1995)

(a) The clauses at 52.236-2, Differing Site Conditions, and 52.236-3, Site Investigations and Conditions Affecting the Work, will be included in any contract awarded as a result of this solicitation. Accordingly, offerors or quoters are urged and expected to inspect the site where the work will be performed.

(b) Site visits may be arranged during normal duty hours by contacting:

Name: David O'Connor
Address: North Central Resident Office
Telephone: 978/318-8129

Name: Jim Morocco
Address: North Central Resident Office
Telephone: 978/318-8112

(End of provision)

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

http://www/arnet.gov/far
http://farsite.hill.af.mil
http://www/hq.usace.army.mil/cepr/asp/library/efar.asp
http://acqnet.saalt.army.mil/LIBRARY

(End of provision

Section 00600 - Representations & Certifications

CLAUSES INCORPORATED BY FULL TEXT

52.204-3 TAXPAYER IDENTIFICATION (OCT 1998)

(a) Definitions.

Common parent, as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

Taxpayer Identification Number (TIN), as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

___ TIN:.----------

___ TIN has been applied for.

___ TIN is not required because:

___ Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

___ Offeror is an agency or instrumentality of a foreign government;

___ Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

___ Sole proprietorship;

___ Partnership;

___ Corporate entity (not tax-exempt);

___ Corporate entity (tax-exempt);

___ Government entity (Federal, State, or local);

___ Foreign government;

___ International organization per 26 CFR 1.6049-4;

___ Other----------

(f) Common parent.

___ Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this provision.

___ Name and TIN of common parent:

Name----------

TIN----------

(End of provision)

52.204-8 ANNUAL REPRESENTATIONS AND CERTIFICATIONS (JAN 2005)

(a)(1) If the clause at 52.204-7, Central Contractor Registration, is included in this solicitation, paragraph (b) of this provision applies.

(2) If the clause at 52.204-7 is not included in this solicitation, and the offeror is currently registered in CCR, and has completed the ORCA electronically, the offeror may choose to use paragraph (b) of this provision instead of completing the corresponding individual representations and certifications in the solicitation. The offeror shall indicate which option applies by checking one of the following boxes:

(__) Paragraph (b) applies.

(__) Paragraph (b) does not apply and the offeror has completed the individual representations and certifications in the solicitation.

(b) The offeror has completed the annual representations and certifications electronically via the Online Representations and Certifications Application (ORCA) website at http://orca.bpn.gov. After reviewing the ORCA database information, the offeror verifies by submission of the offer that the representations and certifications currently posted electronically have been entered or updated within the last 12 months, are current, accurate, complete, and applicable to this solicitation (including the business size standard applicable to the NAICS code referenced for this solicitation), as of the date of this offer and are incorporated in this offer by reference (see FAR 4.1201); except for the changes identified below [offeror to insert changes, identifying change by clause number, title, date]. These amended representation(s) and/or certification(s) are also incorporated in this offer and are current, accurate, and complete as of the date of this offer.

FAR Clause	Title	Date	Change
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Any changes provided by the offeror are applicable to this solicitation only, and do not result in an update to the representations and certifications posted on ORCA.

(End of Provision)

52.219-4 NOTICE OF PRICE EVALUATION PREFERENCE FOR HUBZONE SMALL BUSINESS CONCERNS (OCT 2004)

(a) Definition. HUBZone small business concern, as used in this clause, means a small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

(b) Evaluation preference. (1) Offers will be evaluated by adding a factor of 10 percent to the price of all offers, except--

(i) Offers from HUBZone small business concerns that have not waived the evaluation preference;

(ii) Otherwise successful offers from small business concerns;

(iii) Otherwise successful offers of eligible products under the Trade Agreements Act when the dollar threshold for application of the Act is exceeded (see 25.402 of the Federal Acquisition Regulation (FAR)); and

(iv) Otherwise successful offers where application of the factor would be inconsistent with a Memorandum of Understanding or other international agreement with a foreign government.

(2) The factor of 10 percent shall be applied on a line item basis or to any group of items on which award may be made. Other evaluation factors described in the solicitation shall be applied before application of the factor.

(3) A concern that is both a HUBZone small business concern and a small disadvantaged business concern will receive the benefit of both the HUBZone small business price evaluation preference and the small disadvantaged business price evaluation adjustment (see FAR clause 52.219-23). Each applicable price evaluation preference or adjustment shall be calculated independently against an offeror's base offer.

These individual preference amounts shall be added together to arrive at the total evaluated price for that offer.

(c) Waiver of evaluation preference. A HUBZone small business concern may elect to waive the evaluation preference, in which case the factor will be added to its offer for evaluation purposes. The agreements in paragraph (d) of this clause do not apply if the offeror has waived the evaluation preference.

___ Offeror elects to waive the evaluation preference.

(d) Agreement. A HUBZone small business concern agrees that in the performance of the contract, in the case of a contract for

(1) Services (except construction), at least 50 percent of the cost of personnel for contract performance will be spent for employees of the concern or employees of other HUBZone small business concerns;

(2) Supplies (other than procurement from a nonmanufacturer of such supplies), at least 50 percent of the cost of manufacturing, excluding the cost of materials, will be performed by the concern or other HUBZone small business concerns;

(3) General construction, at least 15 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns; or

(4) Construction by special trade contractors, at least 25 percent of the cost of the contract performance incurred for personnel will be spent on the concern's employees or the employees of other HUBZone small business concerns.

(e) A HUBZone joint venture agrees that in the performance of the contract, the applicable percentage specified in paragraph (d) of this clause will be performed by the HUBZone small business participant or participants.

(f) A HUBZone small business concern nonmanufacturer agrees to furnish in performing this contract only end items manufactured or produced by HUBZone small business manufacturer concerns. This paragraph does not apply in connection with construction or service contracts.

(End of clause)

252.209-7001 DISCLOSURE OF OWNERSHIP OR CONTROL BY THE GOVERNMENT OF A TERRORIST COUNTRY (SEP 2004)

(a) "Definitions."

As used in this provision --

(a) "Government of a terrorist country" includes the state and the government of a terrorist country, as well as any political subdivision, agency, or instrumentality thereof.

(2) "Terrorist country" means a country determined by the Secretary of State, under section 6(j)(1)(A) of the Export Administration Act of 1979 (50 U.S.C. App. 2405(j)(i)(A)), to be a country the government of which has repeatedly provided support for such acts of international terrorism. As of the date of this provision, terrorist countries subject to this provision include: Cuba, Iran, Libya, North Korea, Sudan, and Syria.

(3) "Significant interest" means --

(i) Ownership of or beneficial interest in 5 percent or more of the firm's or subsidiary's securities. Beneficial interest includes holding 5 percent or more of any class of the firm's securities in "nominee shares," "street names," or some other method of holding securities that does not disclose the beneficial owner;

(ii) Holding a management position in the firm, such as a director or officer;

(iii) Ability to control or influence the election, appointment, or tenure of directors or officers in the firm;

(iv) Ownership of 10 percent or more of the assets of a firm such as equipment, buildings, real estate, or other tangible assets of the firm; or

(v) Holding 50 percent or more of the indebtness of a firm.

(b) "Prohibition on award."

In accordance with 10 U.S.C. 2327, no contract may be awarded to a firm or a subsidiary of a firm if the government of a terrorist country has a significant interest in the firm or subsidiary or, in the case of a subsidiary, the firm that owns the subsidiary, unless a waiver is granted by the Secretary of Defense.

(c) "Disclosure."

If the government of a terrorist country has a significant interest in the Offeror or a subsidiary of the Offeror, the Offeror shall disclosure such interest in an attachment to its offer. If the Offeror is a subsidiary, it shall also disclose

any significant interest the government of a terrorist country has in any firm that owns or controls the subsidiary. The disclosure shall include --

(1) Identification of each government holding a significant interest; and

(2) A description of the significant interest held by each government.

(End of provision)

252.247-7022 REPRESENTATION OF EXTENT OF TRANSPORTATION BY SEA (AUG 1992)

(a) The Offeror shall indicate by checking the appropriate blank in paragraph (b) of this provision whether transportation of supplies by sea is anticipated under the resultant contract. The term supplies is defined in the Transportation of Supplies by Sea clause of this solicitation.

(b) Representation. The Offeror represents that it:

____ (1) Does anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

____ (2) Does not anticipate that supplies will be transported by sea in the performance of any contract or subcontract resulting from this solicitation.

(c) Any contract resulting from this solicitation will include the Transportation of Supplies by Sea clause. If the Offeror represents that it will not use ocean transportation, the resulting contract will also include the Defense FAR Supplement clause at 252.247-7024, Notification of Transportation of Supplies by Sea.

(End of provision)

Section 00700 - Contract Clauses

CLAUSES INCORPORATED BY REFERENCE

52.202-1	Definitions	JUL 2004
52.203-3	Gratuities	APR 1984
52.203-5	Covenant Against Contingent Fees	APR 1984
52.203-7	Anti-Kickback Procedures	JUL 1995
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity	JAN 1997
52.203-10	Price Or Fee Adjustment For Illegal Or Improper Activity	JAN 1997
52.203-12	Limitation On Payments To Influence Certain Federal Transactions	JUN 2003
52.204-4	Printed or Copied Double-Sided on Recycled Paper	AUG 2000
52.204-7	Central Contractor Registration	OCT 2003
52.209-6	Protecting the Government's Interest When Subcontracting With Contractors Debarred, Suspended, or Proposed for Debarment	JAN 2005
52.211-13	Time Extensions	SEP 2000
52.214-26	Audit and Records--Sealed Bidding	OCT 1997
52.214-27	Price Reduction for Defective Cost or Pricing Data - Modifications - Sealed Bidding	OCT 1997
52.214-28	Subcontracting Cost Or Pricing Data--Modifications--Sealed Bidding	OCT 1997
52.219-8	Utilization of Small Business Concerns	MAY 2004
52.219-9	Small Business Subcontracting Plan	JAN 2002
52.219-25	Small Disadvantaged Business Participation Program--Disadvantaged Status and Reporting	OCT 1999
52.222-3	Convict Labor	JUN 2003
52.222-4	Contract Work Hours and Safety Standards Act - Overtime Compensation	SEP 2000
52.222-6	Davis Bacon Act	FEB 1995
52.222-7	Withholding of Funds	FEB 1988
52.222-8	Payrolls and Basic Records	FEB 1988
52.222-9	Apprentices and Trainees	FEB 1988
52.222-10	Compliance with Copeland Act Requirements	FEB 1988
52.222-11	Subcontracts (Labor Standards)	FEB 1988
52.222-12	Contract Termination-Debarment	FEB 1988
52.222-13	Compliance with Davis-Bacon and Related Act Regulations.	FEB 1988
52.222-14	Disputes Concerning Labor Standards	FEB 1988
52.222-15	Certification of Eligibility	FEB 1988
52.222-21	Prohibition Of Segregated Facilities	FEB 1999
52.222-26	Equal Opportunity	APR 2002
52.222-27	Affirmative Action Compliance Requirements for Construction	FEB 1999
52.222-35	Equal Opportunity For Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans	DEC 2001
52.222-36	Affirmative Action For Workers With Disabilities	JUN 1998
52.222-37	Employment Reports On Special Disabled Veterans, Veterans Of The Vietnam Era, and Other Eligible Veterans	DEC 2001
52.223-5	Pollution Prevention and Right-to-Know Information	AUG 2003
52.223-6	Drug-Free Workplace	MAY 2001
52.223-14	Toxic Chemical Release Reporting	AUG 2003

52.225-13	Restrictions on Certain Foreign Purchases	DEC 2003
52.227-1	Authorization and Consent	JUL 1995
52.227-2	Notice And Assistance Regarding Patent And Copyright Infringement	AUG 1996
52.227-4	Patent Indemnity-Construction Contracts	APR 1984
52.228-2	Additional Bond Security	OCT 1997
52.228-5	Insurance - Work On A Government Installation	JAN 1997
52.228-11	Pledges Of Assets	FEB 1992
52.228-12	Prospective Subcontractor Requests for Bonds	OCT 1995
52.228-14	Irrevocable Letter of Credit	DEC 1999
52.228-15	Performance and Payment Bonds--Construction	JUL 2000
52.229-3	Federal, State And Local Taxes	APR 2003
52.232-5	Payments under Fixed-Price Construction Contracts	SEP 2002
52.232-17	Interest	JUN 1996
52.232-23	Assignment Of Claims	JAN 1986
52.232-27	Prompt Payment for Construction Contracts	OCT 2003
52.232-33	Payment by Electronic Funds Transfer--Central Contractor Registration	OCT 2003
52.233-1	Disputes	JUL 2002
52.233-3	Protest After Award	AUG 1996
52.236-2	Differing Site Conditions	APR 1984
52.236-3	Site Investigation and Conditions Affecting the Work	APR 1984
52.236-5	Material and Workmanship	APR 1984
52.236-6	Superintendence by the Contractor	APR 1984
52.236-7	Permits and Responsibilities	NOV 1991
52.236-8	Other Contracts	APR 1984
52.236-9	Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements	APR 1984
52.236-10	Operations and Storage Areas	APR 1984
52.236-11	Use and Possession Prior to Completion	APR 1984
52.236-12	Cleaning Up	APR 1984
52.236-13 Alt I	Accident Prevention (Nov 1991) - Alternate I	NOV 1991
52.236-14	Availability and Use of Utility Services	APR 1984
52.236-15	Schedules for Construction Contracts	APR 1984
52.236-21 Alt I	Specifications and Drawings for Construction (Feb 97) - Alternate I	APR 1984
52.236-26	Preconstruction Conference	FEB 1995
52.242-13	Bankruptcy	JUL 1995
52.242-14	Suspension of Work	APR 1984
52.243-4	Changes	AUG 1987
52.244-6	Subcontracts for Commercial Items	DEC 2004
52.246-12	Inspection of Construction	AUG 1996
52.248-3	Value Engineering-Construction	FEB 2000
52.249-2 Alt I	Termination for Convenience of the Government (Fixed-Price) (May 2004) - Alternate I	SEP 1996
52.249-10	Default (Fixed-Price Construction)	APR 1984
252.201-7000	Contracting Officer's Representative	DEC 1991
252.203-7001	Prohibition On Persons Convicted of Fraud or Other Defense-Contract-Related Felonies	DEC 2004
252.204-7003	Control Of Government Personnel Work Product	APR 1992
252.205-7000	Provision Of Information To Cooperative Agreement Holders	DEC 1991
252.209-7004	Subcontracting With Firms That Are Owned or Controlled By The Government of a Terrorist Country	MAR 1998
252.223-7004	Drug Free Work Force	SEP 1988

252.223-7006	Prohibition On Storage And Disposal Of Toxic And Hazardous Materials	APR 1993
252.225-7012	Preference For Certain Domestic Commodities	JUN 2004
252.225-7031	Secondary Arab Boycott Of Israel	APR 2003
252.227-7033	Rights in Shop Drawings	APR 1966
252.231-7000	Supplemental Cost Principles	DEC 1991
252.236-7000	Modification Proposals-Price Breakdown	DEC 1991
252.236-7008	Contract Prices-Bidding Schedules	DEC 1991
252.243-7001	Pricing Of Contract Modifications	DEC 1991
252.243-7002	Requests for Equitable Adjustment	MAR 1998
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7023	Transportation of Supplies by Sea	MAY 2002
252.247-7024	Notification Of Transportation Of Supplies By Sea	MAR 2000

CLAUSES INCORPORATED BY FULL TEXT

52.204-9002 REPORTING OF CONTRACTOR MANPOWER DATA ELEMENTS

(a) Scope. The following sets forth contractual requirements for reporting of contractor labor work year equivalents (also called Contractor Man-year Equivalents (CMEs)) in support of the Army, pursuant to 10 U.S.C. 129a, 10 U.S.C. 2461(g), Section 343 of P.L. 106-65, and 32 CFR 668. Reporting shall be accomplished electronically by direct contractor submission to the secure Army Web Site: https://contractormanpower.us.army.mil. Information on the background, purposes, and significance of this reporting requirement, and the 32 CFR 668 Final Rule as published in the Federal Register, can be found at this Web Site. In addition, a Help Desk function, detailed instructions on what and how to report, FAQs, and a site demonstration are available. The Army's objective is to collect as much significant CME data as possible to allow accurate reporting to Congress and for effective Army planning. The reporting data elements should not be viewed as an "all or nothing" requirement. Even partial reporting, e.g., direct labor hours, appropriation data, place of performance, Army customer, etc., will be helpful.

(b) Applicability. This reporting requirement applies to services covered by Federal Supply Class or Service codes for "Research and Development," and "Other Services and Construction." Report submissions shall not contain classified information. (Also see "Exemptions" at (d) below.)

(c) Requirements. The contractor is required to report the following contractor manpower information, associated with performance of this contract action in support of Army requirements, for all covered contracts, to the Office, Assistant Secretary of the Army (Manpower and Reserve Affairs) (ASA(M&RA)), using the secure Army data collection web-site at https://contractormanpower.us.army.mil. (Other information requirements associated with the manpower data collection (contract and task or delivery order numbers; appropriation data and amounts; total estimated value of contract; federal supply class or service code; major Army organizational element receiving or reviewing work; beginning and ending data for reporting period; place of performance; name, address, and point of contact for contractor; etc.) are specified and explained at the web site.)

(1) Labor Hours. Composite direct labor hours, and the value of those indirect labor hours plus compensation related costs for direct labor hours ordinarily included in the indirect pools[1].

(2) Rates. Alternatively, contractors may report two distinct, relevant (annualized) composite or average indirect labor rates in lieu of raw indirect labor hours and the value of those indirect hours. Such rates shall be annualized average estimates for the reporting contractor and need not be developed for each reporting period. Either method chosen should be consistently reported.

[1] Compensation costs are defined in the reporting instructions at the Army Web Site.

(d) Exemption(s). If the contractor is unable to comply with these reporting requirements without creating a whole new cost allocation system or system of records (such as a payroll accounting system), or due to similar insurmountable practical or economic reasons, the contractor may claim an exemption to at least a portion of the reporting requirement by certifying in writing to the contracting officer the clear underlying reason(s) for exemption from the specified report data element(s), and further certifying that they do not otherwise have to provide the exempted information, in any form, to the United States Government. The "self-exemption" will apply to all contract actions involving the contractor and will be reviewed and approved by the Deputy Assistant Secretary of the Army (Procurement), in coordination with the Deputy Assistant Secretary of the Army (Force Management and Resources), whose decision is final in this matter.

(e) Uses and Safeguarding of Information. The information submitted will be treated as contractor proprietary when associated with a contractor name of contract number.

(f) Subcontract Data. The contractor shall ensure that all reportable subcontract data is timely reported to the data collection web site (citing this contract/order number). At the discretion of the prime contractor, this reporting may be done directly by subcontractors to the data collection site; or by the prime contractor after consolidating and rationalizing all significant data from their subcontractors.

(g) Report schedule. The contractor is required to report the required information to the ASA(M&RA) data collection web site generally contemporaneous with submission of a request for payment (for example, voucher, invoice, or request for progress payment), but not less frequently than quarterly, retroactive to October 1, 1999, or the start of the contract/order, whichever is later. Deviation from this schedule requires approval of the contracting officer.

(h) Reporting Flexibility. Contractors are encouraged to communicate with the Help Desk identified at the data collection web site to resolve reporting difficulties. The web site reporting pages include a "Remarks" field to accommodate non-standard data entries if needed to facilitate simplified reporting and to minimize reporting burdens arising out of unique circumstances. Changes to facilitate reporting may be authorized by the contracting officer or the Help Desk (under HQDA policy direction and oversight).

52.214-5000 APPARENT CLERICAL MISTAKES (MAR 1995)--EFARS

(a) For the purpose of initial evaluations of bids, the following will be utilized in the resolving arithmetic discrepancies found on the face of bidding schedule as submitted by the bidder:

(1) Obviously misplaced decimal points will be corrected;

(2) Discrepancy between unit price and extended price, the unit price will govern;

(3) Apparent errors in extension of unit prices will be corrected;

(4) Apparent errors in addition of lump-sum and extended prices will be corrected.

(b) For the purpose of bid evaluation, the government will proceed on the assumption that the bidder intends his bid to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid will be so reflected on the abstract of bids.

(c) These correction procedures shall not be used to resolve any ambiguity concerning which bid is low.

(End of statement)

52.222-23 NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY FOR CONSTRUCTION (FEB 1999)

(a) The offeror's attention is called to the Equal Opportunity clause and the Affirmative Action Compliance Requirements for Construction clause of this solicitation.

(b) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation for each trade	Goals for female participation for each trade
4.0%	6.9%

These goals are applicable to all the Contractor's construction work performed in the covered area. If the Contractor performs construction work in a geographical area located outside of the covered area, the Contractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

(c) The Contractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction," and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade. The Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor, or from project to project, for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

(d) The Contractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 working days following award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the --

(1) Name, address, and telephone number of the subcontractor;

(2) Employer's identification number of the subcontractor;

(3) Estimated dollar amount of the subcontract;

(4) Estimated starting and completion dates of the subcontract; and

(5) Geographical area in which the subcontract is to be performed.

(e) As used in this Notice, and in any contract resulting from this solicitation, the "covered area" is Keene, New Hampshire, Cheshire County.

(End of provision)

52.225-9 BUY AMERICAN ACT—CONSTRUCTION MATERIALS (JAN 2005)

(a) Definitions. As used in this clause--

Component means an article, material, or supply incorporated directly into a construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the construction material (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the manufacture of the construction material.

Domestic construction material means--

(1) An unmanufactured construction material mined or produced in the United States; or

(2) A construction material manufactured in the United States, if the cost of its components mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Components of foreign origin of the same class or kind for which nonavailability determinations have been made are treated as domestic.

Foreign construction material means a construction material other than a domestic construction material.

United States means the 50 States, the District of Columbia, and outlying areas.

(b) Domestic preference. (1) This clause implements the Buy American Act (41 U.S.C. 10a-10d) by providing a preference for domestic construction material. The Contractor shall use only domestic construction material in performing this contract, except as provided in paragraphs (b)(2) and (b)(3) of this clause.

(2) This requirement does not apply to the construction material or components listed by the Government as follows: [Contracting Officer to list applicable excepted materials or indicate "none"]

(3) The Contracting Officer may add other foreign construction material to the list in paragraph (b)(2) of this clause if the Government determines that

(i) The cost of domestic construction material would be unreasonable. The cost of a particular domestic construction material subject to the requirements of the Buy American Act is unreasonable when the cost of such material exceeds the cost of foreign material by more than 6 percent;

(ii) The application of the restriction of the Buy American Act to a particular construction material would be impracticable or inconsistent with the public interest; or

(iii) The construction material is not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality.

(c) Request for determination of inapplicability of the Buy American Act. (1)(i) Any Contractor request to use foreign construction material in accordance with paragraph (b)(3) of this clause shall include adequate information for Government evaluation of the request, including--

(A) A description of the foreign and domestic construction materials;

(B) Unit of measure;

(C) Quantity;

(D) Price;

(E) Time of delivery or availability;

(F) Location of the construction project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign construction materials cited in accordance with paragraph (b)(3) of this clause.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed price comparison table in the format in paragraph (d) of this clause.

(iii) The price of construction material shall include all delivery costs to the construction site and any applicable duty (whether or not a duty-free certificate may be issued).

(iv) Any Contractor request for a determination submitted after contract award shall explain why the Contractor could not reasonably foresee the need for such determination and could not have requested the determination before contract award. If the Contractor does not submit a satisfactory explanation, the Contracting Officer need not make a determination.

(2) If the Government determines after contract award that an exception to the Buy American Act applies and the Contracting Officer and the Contractor negotiate adequate consideration, the Contracting Officer will modify the contract to allow use of the foreign construction material. However, when the basis for the exception is the unreasonable price of a domestic construction material, adequate consideration is not less than the differential established in paragraph (b)(3)(i) of this clause.

(3) Unless the Government determines that an exception to the Buy American Act applies, use of foreign construction material is noncompliant with the Buy American Act.

(d) Data. To permit evaluation of requests under paragraph (c) of this clause based on unreasonable cost, the Contractor shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Construction Materials Price Comparison

Construction material description	Unit of measure	Quantity	Price (dollars) \1\
Item 1			
Foreign construction material....	.....	.....	.....

Domestic construction material... ....
Item 2
Foreign construction material.... ....
Domestic construction material... ....

Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry certificate is issued).
List name, address, telephone number, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.
Include other applicable supporting information.

(End of clause)

52.227-5001 PARTICIPATION OF FOREIGN NATIONALS IN USACE CONTRACTS

All contractor employees (U.S. Citizens and Non-U.S. Citizens) working under this contract who require access to Automated Information Systems (AIS), (stand alone computers, network computers/systems, email) shall, at a minimum, be designated into an ADP-III position (non sensitive) in accordance with DoD 5220-22-R, Industrial Security Regulation. The investigative requirements for an ADP – III position are favorable National Agency Check (NAC), SF-85P, Public Trust Position. The contractor shall have each applicable employee complete a SF-85P and submit to the U.S. Army Engineer District, New England, 696 Virginia Road, Concord, MA 01742-2751, Security Officer, within three (3) working days after award of any contract or task order, and shall be submitted prior to the individual being permitted to access AIS. Contractors that have a commercial or government entity (CAGE) Code and Facility Security Clearance through the Defense Security Service shall process the NAC's and forward visit requests/results of NAC to the U.S. Army Engineer District, New England, 696 Virginia Road, Concord, MA 01742-2751 – Security Officer. For those contractors that do not have a Cage Code or Facility Security Clearance, the U.S. Army Engineer District, New England – Bldg 1, 696 Virginia Road, Concord, MA 01742-2751, Security Officer will process the investigation in coordination with the Contractor and contract employees.

In accordance with Engineering Regulation, ER-380-1-18, Section 4, foreign nationals who work on Corps of Engineers' contracts or task orders shall be approved by HQUSACE Foreign Disclosure Officer or higher before beginning work on the contract/task order. This regulation includes subcontractor employees. (NOTE: exceptions to the above requirement include foreign nationals who perform janitorial and/or grounds maintenance services.) The contractor shall submit to the U.S. Army Engineer District, New England, Contracting Division, the names of all foreign nationals proposed for performance under this contract/task order, along with documentation to verify that he/she was legally admitted into the United States and has authority to work and/or go to school in the US. Such documentation may include a U.S. Passport, Certificate of U.S. Citizenship (INS Form N-560 or N-561), Certificate of Naturalization (INS Form N-550 or N-570), foreign passport with I-551 stamp or attached INS From I-94 indicating employment authorization, Alien Registration Receipt Card with photograph (INS From I-151 or I-551), Temporary Resident Card (INS From I688), Employment Authorization Card (INS Form I-688A), Reentry Permit (INS Form I-327), Refugee Travel Document (INS From I-571), Employment Authorization Document issued by INS which contains a photograph (INS Form I-688B).

52.231-5000 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE
MAR 1995)--EFARS
(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.
(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or

subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region ____. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

(End of clause)

52.232-5002 CONTINUING CONTRACTS (ALTERNATE) (MAR 1995)--EFARS

(a) Funds are not available at the inception of this contract to cover the entire contract price. The sum $600,00.00 of has been reserved for this contract and is available for payment to the contractor during the current fiscal year. it is expected that Congress will make appropriations for future fiscal years from which additional funds, together with funds provided by one or more non-federal project sponsors will be reserved for this contract. The liability of the United States for payments beyond the funds reserved for this contract is contingent on the reservation of additional funds.

(b) Failure to make payments in excess of the amount currently reserved, or that may be reserved form time to time, shall not be considered a breach of this contract, and shall not entitle the contractor to a price adjustment under the terms of this contract except as specifically provided in paragraphs (e) and (h) below.

(c) The Government may at any time reserve additional funds for payments under the contract if there are funds available for such purpose. The contracting officer will promptly notify the contractor of any additional funds reserved for the contract by issuing an administrative modification to the contract.

(d) If earnings will be such that funds reserved for the contract will be exhausted before the end of any fiscal year, the contractor shall give written notice to the contracting officer of the estimated date of exhaustion and the amount of additional funds which will be needed to meet payments due or to become due under this contract during that fiscal year. This notice shall be given not less than 45 nor more than 60 days prior to the estimated date of exhaustion.

(e) No payments will be make after exhaustion of funds except to the extent that additional funds are reserved for the contract. If and when sufficient additional funds are reserved, the contractor shall be entitled to simple interest on any payment that the contracting officer determines was actually earned under the terms of this contract and would have been made except for exhaustion of funds. Interest shall be computed from the time such payment would otherwise have been made until actually or constructively made, and shall be at the rate established by the Secretary of the Treasury pursuant to Public Law 92-41, 85 STAT 97, as in effect on the first day of the delay in such payment.
(f) Any suspension, delay, or interruption of work arising from exhaustion or anticipated exhaustion of funds shall riot constitute a breach of this contract and shall not entitle the contractor to any price adjustment under a "Suspension of Work" or similar clause or in any other manner under this contract.

(g) An equitable adjustment in performance time shall be made for any increase in the time required for performance of any part of the work arising from exhaustion of funds or the reasonable anticipation of exhaustion of funds.

(h) If, upon the expiration of sixty (60) days after the beginning of the fiscal year following an exhaustion of funds, the Government has failed to reserve sufficient additional funds to cover payments other vise due, the contractor, by written notice delivered to the contracting officer at any time before such additional funds are reserved, may elect to treat his right to proceed with the work as having been terminated. Such a termination shall be at no cost to the Government, except that, to the extent that additional funds to make payment therefore are allocated to
this contract, it may be treated as a termination for the convenience of the Government.

(i) If at any time it becomes apparent that the funds reserved for any fiscal year are in excess of the funds required to meet all payments due or to become due the contractor because of work performed and to be performed under this contract during the fiscal year, the Government reserves the right, after notice to the contractor, to reduce said reservation by the amount of such excess.

(j) The term "Reservation" means monies that have been set aside and made available for payments under this contract.
(End of clause)

52.252-2 CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://www/arnet.gov/far
http://farsite.hill.af.mil
http://www/hq.usace.army.mil/cepr/asp/library/efar.asp
http://acqnet.saalt.army.mil/LIBRARY

(End of clause)

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SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

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SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

1.1 COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK (APR 1984) FAR 52.211-10

a. The Contractor shall be required to--

(1) commence work under this contract within 15 calendar days after the date the Contractor receives the notice to proceed,

(2) prosecute the work diligently, and

(3) complete the entire work ready for use not later than 330 calendar days after the date the Contractor receives notice to proceed. The time stated for completion shall include final cleanup of the premises.

b. Due to environmental restrictions, other than planting no construction activities (wetland or upland) will be permitted from March 15 to June 15 of any year. Upon receipt of notice to proceed, in lieu of construction operations at the site, the Contractor shall promptly place all orders, award subcontracts, process required submittals and details to ensure effective action when construction operations at the site commence.

1.2 LIQUIDATED DAMAGES - CONSTRUCTION (Sept 2000) FAR 52.211-12

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of $750.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

1.3 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000) DFARS 252.236-7001

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference. The drawings will be provided to the Contractor in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall-

(1) Check all drawings furnished immediately upon receipt;

(2) Compare all drawings and verify the figures before laying out the work;

(3) Promptly notify the Contracting Officer of any discrepancies;

(4) Be responsible for any errors that might have been avoided by complying with this paragraph (b); and

(5) Reproduce and print contract drawings and specifications as needed.

(c) In general--

(1) Large-scale drawings shall govern small-scale drawings; and

(2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work that are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications, and to the contract drawings identified on the following index of drawings:

Sheet No.	Drawing File No.	Title
		OTTER BROOK LAKE MODIFY SPILLWAY KEENE NEW HAMPSHIRE
1 C-1	OBDC101.S02	GENERAL PLAN, LEGEND, INDEX TO DRAWINGS AND NOTES

1.4 DESIGNATED BILLING OFFICE

Reference Contract Clause titled "PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS" located in SECTION 00700, CONTRACT CLAUSES. The "designated billing office" will be the Construction Area Engineer, Resident Engineer or project office where the Contracting Officer Representative for this contract is located. The Contractor will be notified of the exact location of this office at the project preconstruction conference specified in Section 01110 SUMMARY OF WORK.

1.5 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER (OCT 1989) ER 415-1-15

a. This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE entitled, "DEFAULT (FIXED PRICE CONSTRUCTION)." In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied.

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS
BASED ON 5 DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN
(11)	(7)	(5)	(1)	(1)	(1)

JUL	AUG	SEP	OCT	NOV	DEC
(1)	(1)	(1)	(1)	(6)	(9)

c. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "DEFAULT (FIXED PRICE CONSTRUCTION)."

1.6 BID GUARANTEE (SEP 1996) FAR 52.228-1

(a) Failure to furnish a bid guarantee in the proper form and amount, by the time set for opening of bids, may be cause for rejection of the bid.

(b) The bidder shall furnish a bid guarantee in the form of a firm commitment, e.g., bid bond supported by good and sufficient surety or sureties acceptable to the Government, postal money order, certified check, cashier's check, irrevocable letter of credit, or, under Treasury Department regulations, certain bonds or notes of the United States. The Contracting Officer will return bid guarantees, other than bid bonds, (1) to unsuccessful bidders as soon as practicable after the opening of bids, and (2) to the successful bidder upon execution of contractual documents and bonds (including any necessary coinsurance or reinsurance agreements), as required by the bid as accepted.

(c) The amount of the bid guarantee shall be twenty percent of the bid price or $3,000,000, whichever is less.

(d) If the successful bidder, upon acceptance of its bid by the Government within the period specified for acceptance, fails to execute all contractual documents or furnish executed bond(s) within 10 days

after receipt of the forms by the bidder, the Contracting Officer may terminate the contract for default.

(e) In the event the contract is terminated for default, the bidder is liable for any cost of acquiring the work that exceeds the amount of its bid, and the bid guarantee is available to offset the difference.

1.7 INSURANCE REQUIRED

In accordance with CONTRACT CLAUSE titled "INSURANCE - WORK ON A GOVERNMENT INSTALLATION" the Contractor shall procure and maintain during the entire period of his performance under this contract the following kinds and minimum amounts of insurance:

Type	Amount
Workmen's Compensation and Employers' Liability Insurance. The Contractor shall comply with all applicable Workmen's Compensation Statutes and shall furnish evidence of Employers' Liability Insurance.	Not less than $100,000
General Liability Insurance Bodily injury liability insurance on the comprehensive form of policy.	Minimum limits of $500,000 per accident
Automobile Liability Insurance Bodily injury liability and property damage liability insurance on the comprehensive form of policy and shall cover the operation of all automobiles used in performance of the contract.	Minimum limits of $200,000 per person and $500,000 per accident for bodily injury and $20,000 per accident for property damage.

1.8 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984) FAR 52.236-1

The Contractor shall perform on the site, and with its own organization, work equivalent to at least 20 percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

1.9 WARRANTY OF CONSTRUCTION (MAR 1994) FAR 52.246-21 Alternate I

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (i) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

(b) This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession.

(c) The Contractor shall remedy at the Contractor's expense any failure

to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of--

(1) The Contractor's failure to conform to contract requirements; or

(2) Any defect of equipment, material, workmanship, or design furnished.

(d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

(e) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

(f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

(g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall--

(1) Obtain all warranties that would be given in normal commercial practice;

(2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and

(3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

(h) In the event the Contractor's warranty under paragraph (b) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

(i) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

(j) This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

(k) Defects in design or manufacture of equipment specified by the Government on a 'brand name and model' basis, shall not be included in this warranty. In this event, the Contractor shall require any subcontractors, manufacturers, or suppliers thereof to execute their warranties, in writing, directly to the Government.

1.10 PAYMENT FOR MOBILIZATION AND DEMOBILIZATION
(DEC 1991) DFARS 252.236-7004.

a. The Government will pay all costs for the mobilization and demobilization of all of the Contractor's plant and equipment at the contract lump sum price for this item.

(1) Sixty percent of the lump sum price upon completion of the Contractor's mobilization at the work site.

(2) The remaining 40 percent upon completion of demobilization.

b. The Contracting Officer may require the Contractor to furnish cost data to justify this portion of the bid if the Contracting Officer believes that the percentages in paragraphs a(1) and a(2) of this clause do not bear a reasonable relation to the cost of the work in this contract.

(1) Failure to justify such price to the satisfaction of the Contracting Officer will result in payment, as determined by the Contracting Officer, of --

(i) Actual mobilization costs at completion of mobilization;

(ii) Actual demobilization costs at completion of demobilization; and

(iii) The remainder of this item in the final payment under this contract.

(2) The Contracting Officer's determination of the actual costs in paragraph b(1) of this clause is not subject to appeal.

1.11 QUANTITY SURVEYS. (APR 1984) ALTERNATE 1 FAR 52.236-16

a) Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.

(b) The Contractor shall conduct the original and final surveys and surveys for any periods for which progress payments are requested. All these surveys shall be conducted under the direction of a representative of the Contracting Officer, unless the Contracting Officer waives this requirement in a specific instance. The Government shall make such computations as are necessary to determine the quantities of work performed or finally in place. The Contractor shall make the computations based on the surveys for any periods for which progress payments are requested.

(c) Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Contracting Officer.

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01110

SUMMARY OF WORK

-- End of Section Table of Contents --

SECTION 01110

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

The general description below is given to indicate the approximate scope of this project only. It does not limit the work required under the project drawings and specifications.

The work of this project consists of the following: Remove existing ogee weir and spillway sill from the spillway channel. Excavate the spillway channel floor both upstream and downstream of the existing weir. Place a new concrete sill, a concrete pier and concrete abutment walls on both sides of the spillway channel. Install six Fusegates on the new spillway sill and between the abutment walls and pier. Associated with this work is reconstruction of a wetland upstream of the new Fusegates and construction of a dike on the left side of the spillway channel.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Progress Schedule; G, RO.

In accordance with the contract clauses, the Contractor shall, within five (5) days after receipt of notice to proceed or as otherwise determined by the Contracting Officer, submit for approval a practicable progress schedule. When changes are authorized that result in contract time extensions, Contractor shall submit a modified chart for approval by the Contracting Officer.

1.3 PROJECT/SITE CONDITIONS

1.3.1 Site Security

The Contractor shall report any vandalism, suspicious activities or devices to the Project Manager or local police as soon as possible. The Project Manager will notify the Contractor of any heightened security measures and will expect vigilant monitoring of equipment, grounds and any security fencing while working. At a heightened security posture, there may be work areas that are restricted. The Project Manager will notify the Contractor of these restricted areas, and work may be delayed or restricted or will be performed in these areas under the direct supervision of Corps. personnel.

1.4 WORK SEQUENCE AND SCHEDULING

1.4.1 Hours of Operations

Normal work hours are from 7:00 a.m. through 3:30 p.m., Monday through Friday. The Contractor will not be permitted to work on Saturday, Sunday or legal holidays unless otherwise authorized by the Contracting Officer. The exclusion of work on Saturday, Sunday and legal holidays has been considered in computing the performance time of this contract. The following legal holidays are observed:

January 1st
Third Monday in January
Third Monday in February
Last Monday of May
July 4th
1st Monday of September
2nd Monday of October
11th of November
Fourth Thursday of November
25th of December

When one of the above designated legal holidays falls on a Sunday, the following Monday will be observed as a legal holiday. When a legal holiday falls on a Saturday, the preceding Friday is observed as a holiday. Requests to perform work at other times shall be made in writing to the Contracting Officer. Every effort will be made to accommodate such requests.

1.4.2 Work Sequence

1.4.2.1 General

There are certain essential criteria relative to the preparation of a work sequence and time schedule which the Contractor will be required to implement and follow during the prosecution of the work. Minor variations in the sequence of the items of work as specified may be made by the Contractor, provided such variations do not conflict with critical elements of the schedule. Proposed minor variations shall be noted on the progress charts submittal required by CONTRACT CLAUSE, entitled "SCHEDULES FOR CONSTRUCTION CONTRACTS." Variations shall be approved by the Contracting Officer prior to implementation.

1.4.2.2 Progress Schedule

The progress schedule shall be in the form of a chart graphically indicating the sequence proposed to accomplish each work feature or operation. The chart shall be prepared to show the starting and completion dates of all work features on a linear horizontal time scale beginning with date of Notice to Proceed and indicating calendar days to completion. Contractor shall indicate on the chart the important work features or operations that are critical to the timely overall completion of the project. Key dates for such important work features and portions of work features are milestone dates and shall be so indicated on the chart. This schedule will be the medium through which the timeliness of the Contractor's construction effort is appraised.

1.4.2.3 Work Specified Elsewhere

Certain other construction sequence and time period restrictions relative to particular items of work are specified in the applicable specification sections to which the work pertains, and as specified on the contract drawings.

1.4.3 Organization at the Site

1.4.3.1 General

The Contractor shall employ ample personnel and sufficient equipment to accomplish the work of this contract in the least amount of time, within the prosecution period specified in SPECIAL CONTRACT REQUIREMENTS, Clause 1.1.

1.4.3.2 Rate of Progress

Should the Contractor fail to maintain a satisfactory rate of progress in accordance with the Contractor's approved progress schedule, the Contracting Officer may require that additional personnel and equipment be placed on the work and weekend and overtime work be performed, in order that the work be brought up to schedule and maintained.

1.5 CONTRACTOR USE OF PREMISES

1.5.1 Storage Areas

See Section 01500 for information on storage areas available for use by the Contractor.

1.5.2 Work Limits

Work shall be restricted to the areas shown on the contract drawings in addition to storage areas assigned to this Contractor.

1.5.3 Contractor's Receipt of Supplies

The Contractor shall be responsible for all arrangements for the receipt of materials and supplies at the job site. Government personnel are not permitted to receive or sign for items delivered to the site.

1.5.4 Access to Work Site

Access to the project site is currently available for construction traffic.

1.6 PRECONSTRUCTION CONFERENCE

The Contracting Officer will conduct a preconstruction conference with key Contractor personnel. The purpose of the conference is to review contract requirements and to establish a working relationship between the Contractor's Staff and the Corps Of Engineers personnel who will be closely associated with this project. During the conference, the Contracting Officer will inform the Contractor concerning Job Safety, Quality Control, Labor Relations, and Environmental Protection. The Contractor's Superintendent, Quality Control Representative, and Site Safety and Health Officer (SSHO) shall attend this conference. All submittals which are ready for submission prior to start of work may be brought to the conference for distribution to the participating reviewers.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01150

SPECIAL PROJECT PROCEDURES FOR FLOOD CONTROL

-- End of Section Table of Contents --

SECTION 01150

SPECIAL PROJECT PROCEDURES FOR FLOOD CONTROL

PART 1 GENERAL

1.1 DAM OPERATING PROCEDURES DURING SPILLWAY RECONSTRUCTION

1.1.1 Existing Operating Procedures

During normal periods there is a 20 foot pool at Otter Brook to support recreational activities. A weir within the intake channel controls the pool level by keeping the two side gates partially closed and the center gate (just downstream of the weir) open 3 feet for a normal summer gate setting for the three gates of 0, 3,and 0.1 openings, respectively. During the winter season the pool is raised approximately 2 feet to a 22 foot stage to inundate the weir and prevent the sluice gates from freezing. During the winter season gate adjustments are made daily to maintain a 22 foot stage. During high runoff times of year Otter Brook Dam is operated, in conjunction with nearby Surry Mountain Dam, based on downstream flow conditions along the Ashuelot River through Keene, New Hampshire as well as further downstream along the Connecticut River.

1.1.2 Operating Procedures During Construction

Regulation procedures during construction will be basically the same as existing procedures with the following modifications:

a. By lowering the spillway channel 5 feet and the crest 10 feet during construction, Otter Brook will be giving up about 20% of its flood control storage. As a result the center weir gate will be kept full open to 4.5 feet during the recreation season instead of a 3 feet opening as currently practiced. This will allow Otter Brook Dam to pass as much normal flow as possible until downstream conditions warrant changes.

b. During the winter season Otter Brook will continue to maintain a winter pool of 22 feet and follow existing winter procedures in maintaining the pool stage.

c. During high runoff periods every effort will be made to continue to release flows through Otter Brook Dam by storing additional runoff at nearby Surry Mountain Dam for longer periods of time until downstream conditions warrant reducing flows through Otter Brook Dam.

1.2 CONTRACTOR ACTIONS FOR FLOOD PROTECTION

The following actions shall be performed by the Contractor to ensure that adequate flood protection is provided to the City of Keene and other downstream areas during construction of the Fusegates. These steps are in addition to the dam regulation procedures by the Government, indicated above in Article "Operating Procedures During Construction."

a. Blasted rock from the required excavations shall be used by the Contractor to construct a temporary cofferdam across the spillway approach channel at station 1+25, as indicated on the drawings. This

zone of rock material shall be graded and supplemented as necessary to have a crest elevation of 775 feet NGVD and have a minimum top width of 20 feet. The temporary cofferdam elevation of 775 feet is to allow the capability to store water up to the 92 foot pool stage. The majority of the cofferdam can be comprised of blasted bedrock that is just left in place after initial blasting of the spillway approach channel floor. It is not necessary to formally build a cofferdam with rock materials that have been removed from other areas, only to supplement the existing low area in the center of the spillway channel at the cofferdam location.

b. The above zone of rock will act as a temporary cofferdam during construction of the new spillway, and shall be left in-place and maintained until the new concrete Fusegates are constructed and operational. The section of blasted rock shall be removed and the rock materials used for the construction of the rock dike after the Fusegates are in place on the spillway sill.

c. A winter shutdown of construction will not be permitted until the new Fusegates are set in place or a temporary cofferdam is constructed as follows: In the event an extended shutdown period is necessary before the Fusegate installation is complete, the Contractor shall construct and maintain a temporary cofferdam to elevation 781 feet NGVD until after the spring snowmelt and runoff season has past, as determined by the Contracting Officer.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01270

MEASUREMENT AND PAYMENT

-- End of Section Table of Contents --

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Quantity Surveys.

Submit originals of all field notes and all other records relating to Quantity Surveys.

1.2 LUMP SUM PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.3 UNIT PRICE PAYMENT ITEMS

Payment items for the work of this contract on which the contract unit price payments will be made are listed in the BIDDING SCHEDULE and described below. The unit price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items. Submit originals of all field notes and all other records relating to Quantity Surveys.

1.4 BIDDING SCHEDULE - PAYMENT ITEMS

Payment items for the work of this contract on which the contract progress payments will be based are listed in the BIDDING SCHEDULE and are described below. All costs for items of work, which are not specifically mentioned to be included in a particular Bidding Schedule lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved.

1.4.1 Item No. 0001, "Mobilization and Demobilization"

a. Payment will be made for costs associated with mobilization and

demobilization for dredging operations, as defined in Special Contract Requirements clause "PAYMENT FOR MOBILIZATION AND DEMOBILIZATION."

b. Unit of measure: Lump Sum.

1.4.2 Item No. 0002, Earth Excavation"

a. The unit of measurement for earth excavation will be the cubic yard, computed by the average end area method from cross sections taken before and after the excavation operations. The volume to be paid for will be the number of cubic yards of material measured in its original position and removed from the excavation. The measurements will include authorized excavation of unsatisfactory subgrade soil, and the volume of loose, scattered rocks and boulders collected within the limits of the work. The measurement will not include the volume excavated without authorization or the volume of any material used for purposes other than directed. The measurement will not include the volume of any excavation performed prior to the taking of elevations and measurements of the undisturbed grade. No separate measurement or payment will be made for clearing and grubbing work incidental to earth excavation or disposal.

b. Payment will be made for costs associated with earth excavation and disposal of the excavated materials for the Fusegate sill and abutment structure, and for the toe of the existing dike, as shown on the drawings. The work shall be performed in accordance with Section 02300 EARTHWORK, which includes performing required excavation and disposal, and other incidental operations.

c. The total quantity of earth excavated material for which payment will be made will be the theoretical quantity between the ground surface as determined by a survey and the grade and slope of the theoretical cross sections indicated. No allowance will be made for overdepth excavation or for the removal of any material outside the required slope lines unless authorized.

c. Unit of measure: Cubic Yard.

1.4.3 Item No. 0003, Rock Excavation

a. The unit of measurement for rock excavation will be the cubic yard, computed by the average end area method from cross sections taken before and after the rock excavation operations, and when the material is acceptably excavated as specified. The measurement will not include the volume excavated without authorization or the volume of any material used for purposes other than specified or directed. The measurement will not include the volume of any excavation performed prior to the taking of elevations and measurements of the undisturbed grade. The measurement shall include all authorized overdepth rock excavation as determined by the Contracting Officer. No separate measurement or payment will be made for clearing and grubbing work incidental to rock excavation.

b. Payment will be made for costs associated with rock excavation for the Fusegate sill and abutment structure as shown on the drawings and in accordance with Section 02300 EARTHWORK. The work includes performing required excavation and other operations incidental thereto.

c. Unit of measure: Cubic Yard.

1.4.4 Item No. 0004, "Dike Construction"

a. Payment will be made for costs associated with augmenting and extending the existing dike as shown on the drawings and in accordance with Section 02300 EARTHWORK. The work covered by this item includes subgrade preparation, hauling materials, stockpiling, processing the rock materials to the required size, and dike construction as shown.

b. Unit of measure: Lump Sum.

1.4.5 Item No. 0005, "Concrete Demolition and Disposal"

a. Payment will be made for costs associated with the demolition and off site disposal of the existing concrete spillway, as identified on the contract drawings and in accordance with Section 02300 EARTHWORK.

b. Unit of measure: Lump Sum.

1.4.6 Item No. 0006, "Construction of Concrete Spillway Sill and Abutments"

a. Payment will be made for costs associated with the construction of the concrete spillway sill and abutments, as identified on the contract drawings and in accordance with Section 03307 CONCRETE FOR MINOR STRUCTURES. The work covered by this item consists of furnishing all concrete materials, reinforcement, miscellaneous embedded materials, and equipment, and performing all labor for the forming, manufacture, transporting, placing, finishing, curing, and protection of concrete in these structures.

b. Unit of measure: Lump Sum.

1.4.7 Item No. 0007, "Construction of Fusegates (Fusegate Modules may be Cast-in-Place or Precast, at the Contractor's Option)"

a. Payment will be made for costs associated with the construction of Fusegates, as identified on the contract drawings and in accordance with the Sections in Division 3 CONCRETE and Section05501 FUSEGATE METAL FABRICATIONS. The work covered by this item consists of furnishing all concrete materials, reinforcement, miscellaneous embedded materials, and equipment, and performing all labor for the forming, manufacture, transporting, placing, finishing, curing, and protection of concrete in these structures.

b. Unit of measure: Lump Sum.

1.4.8 Item No. 0008, "Fusegate Weighing and Testing"

a. Payment will be made for costs associated with the Fusegate weighing and testing, and for fusegate lifting equipment, as identified on the contract drawings and in accordance with Section 05501 FUSEGATE METAL FABRICATIONS.

Note: Fusegate Lifting Equipment shall become the property of the Government.

b. Unit of measure: Lump Sum.

1.4.9 Item No. 0009, "Fusegate Ballast Concrete"

a. Measurement of concrete for payment will be made on the basis of the actual volume within the pay lines of the structure as indicated on the contract drawings. No deductions will be made for rounded or beveled edges, for space occupied by metal work, for voids, or for embedded items.

b. Payment for concrete will be made at the unit price per cubic yard for the fusegate ballast concrete, measured as specified above, which price shall include the cost of all labor, materials, and the use of equipment and tools required to complete the fusegate ballast concrete work. No separate measurement or payment will be made for reinforcement and embedded parts.

c. Unit of measure: Cubic Yard.

1.4.10 Item No. 0010, "Wetlands Mitigation Area"

a. Payment will be made for costs associated with construction of the wetlands mitigation area as specified in Section 02950 WETLANDS MITIGATION AREA.

b. Unit of measure: Job Lump Sum.

1.4.11 Item No. 0011, "Bituminous Concrete Pavement"

a. Payment will be made for costs associated with construction of btuminous concrete pavement at the access road to the dam intake structure, as shown and as specified on the contract drawings.

b. Unit of measure: Job Lump Sum.

1.4.12 Item No. 0012, "Topsoil and Seeding"

a. Payment will be made for costs associated with furnishing and installing topsoil, seed, and erosion and sedimentation control directly associated with turfing operations. Topsoilig and seeding shall be performed in accordance with Section 02950 WETLANDS MITIGATION AREA.

b. Unit of measure: Job Lump Sum.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

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SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

1.1 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. The Contractor module, user manuals, updates, and training information can be downloaded from the RMS web site.This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

Administration
Finances
Quality Control
Submittal Monitoring
Scheduling
Import/Export of Data

1.1.1 Correspondence and Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange correspondence and other documents in electronic format. Correspondence, pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01330, SUBMITTAL PROCEDURES, and Section 01451, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on 3-1/2 inch high-density diskettes or CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become

available.

1.3 SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

Hardware

IBM-compatible PC with 500 MHz Pentium or higher processor

128+ MB RAM for workstation / 256+ MB RAM for server

1 GB hard drive disk space for sole use by the QCS system

3 1/2 inch high-density floppy drive

Compact disk (CD) Reader, 8x speed or higher

SVGA or higher resolution monitor (1024 x 768, 256 colors)

Mouse or other pointing devise

Windows compatible printer (Laser printer must have 4+ MB of RAM)

Connection to the Internet, minimum 56 BPS

Software

MS Windows 98, ME, NT, or 2000

Word Processing software compatible with MS Word 97 or newer

Latest version of : Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher

Electronic mail (E-mail), MAPI compatible

Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.4.2 Contractor Quality Control(CQC) Training

The use of QCS will be discussed with the Contractor's QC System Manager during the mandatory CQC Training class.

1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government will provide the

Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted by E-mail with file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer, a data diskette or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM). The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data by E-mail with file attachment(s). If permitted by the Contracting Officer, a data diskette may be used instead of E-mail. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01451, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01451, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies

it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 300.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.6.4 Submittal Management

The Government will provide the initial submittal register, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts". This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

1.8.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.8.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.8.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01330

SUBMITTAL PROCEDURES

-- End of Section Table of Contents --

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 Submittal

Contract Clauses "FAR 52.236-5, Material and Workmanship," paragraph (b) and "FAR 52.236-21, Specifications and Drawings for Construction," paragraphs (d), (e), and (f) apply to all "submittals."

1.1.2 Submittal Descriptions (SD)

Submittals requirements are specified in the technical sections. Submittals are identified by SD numbers and titles as follows.

SD-01 Preconstruction Submittals

Certificates of insurance.
Surety bonds.
List of proposed subcontractors.
List of proposed products.
Construction Progress Schedule.
Submittal register.
Schedule of prices.
Health and safety plan.
Work plan.
Quality control plan.
Environmental protection plan.

SD-02 Shop Drawings

Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work.

Diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to the Contractor for integrating the product or system into the project.

Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be coordinated.

SD-03 Product Data

Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials or equipment for some portion of the work.

Samples of warranty language when the contract requires extended product warranties.

SD-04 Samples

Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged.

Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project.

Field samples and mock-ups constructed on the project site establish standards by which the ensuring work can be judged. Includes assemblies or portions of assemblies which are to be incorporated into the project and those which will be removed at conclusion of the work.

SD-05 Design Data

Calculations, mix designs, analyses or other data pertaining to a part of work.

SD-06 Test Reports

Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)

Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.

Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

Investigation reports.

Daily checklists.

Final acceptance test and operational test procedure.

SD-07 Certificates

Statements signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements. Must be dated after award of project contract and clearly name the project.

Document required of Contractor, or of a supplier, installer or subcontractor through Contractor, the purpose of which is to further quality of orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel qualifications.

Confined space entry permits.

SD-11 Closeout Submittals

Documentation to record compliance with technical or administrative

requirements or to establish an administrative mechanism.

1.1.3 Approving Authority

Office authorized to approve submittal.

1.1.4 Work

As used in this section, on- and off-site construction required by contract documents, including labor necessary to produce submittals, construction, materials, products, equipment, and systems incorporated or to be incorporated in such construction.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Submittal register; G, RO

1.3 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.3.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.3.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.4 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.5 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.6 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

1.7 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.8 SUBMITTAL REGISTER

At the end of this section is a submittal register showing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor shall maintain a submittal register for the project in accordance with Section 01312 QUALITY CONTROL SYSTEM (QCS). The Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

1.9 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 21 calendar days exclusive of mailing time) shall be allowed and shown on the register for

review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

1.10 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms are included in the QCS software that the Contractor is required to use for this contract. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.11 SUBMITTAL PROCEDURE

Submittals shall be made as follows:

1.11.1 Procedures for Review Copies

Submit seven (7) copies of each submittal item with an attached ENG FORM 4025 Transmittal Form. The Contractor will be informed at the pre-construction conference to send all submittals to either the project Resident Office or to the project Area Engineer Office, as applicable.

a. Construction/Operations Division ("RO" Reviewer): An "RO" in column "f" indicates that the submittal review action is by New England District Construction/Operations Division.

b. Engineering/Planning Division ("DO" Reviewer): An "DO" on the attached submittal register, column "f" indicates that the submittal review action is by the New England District, Engineering/Planning Division.

1.11.2 Information on Submittal Status

All Contractor requests for current status of submittal reviews shall be made through the Resident Engineer.

1.11.3 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.12 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.13 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so

stamped and dated. Five copies of the submittal will be retained by the Contracting Officer and two copies of the submittal will be returned to the Contractor.

1.14 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

1.15 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR

(Firm Name)

_____ Approved

_____ Approved with corrections as noted on submittal data and/or attached sheets(s).

SIGNATURE: _____

TITLE: _____

DATE: _____

-- End of Section --

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE *(Read instructions on the reverse side prior to initiating this form)*	DATE	TRANSMITTAL NO.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		CHECK ONE: THIS TRANSMITTAL IS FOR ☐ FIO ☐ GOV'T. APPROVAL

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* *b.*	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction no. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruction No. 6)* *h.*	FOR CE USE CODE *i.*
				SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*			

REMARKS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated.

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288-R for each entry on this form.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A -- Approved as submitted.	E -- Disapproved (See attached).
B -- Approved, except as noted on drawings.	F -- Receipt acknowledged.
C -- Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX -- Receipt acknowledged, does not comply as noted with contract requirements.
D -- Will be returned by separate correspondence.	G -- Other *(Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

SUBMITTAL REGISTER

CONTRACT NO.
W912WJ-05-B-0005

TITLE AND LOCATION
Modify Spillway, Otter Brook Lake, Keene, NH

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01110	SD-01 Preconstruction Submittals															
			Progress Schedule	1.4.2.2	G	RO												
		01270	SD-07 Certificates															
			Quantity Surveys	1.3														
		01330	SD-01 Preconstruction Submittals															
			Submittal register		G	RO												
		01355	SD-01 Preconstruction Submittals															
			Environmental Protection Plan	1.7	G	RO												
		01500	SD-01 Preconstruction Submittals															
			Site Plan	1.3	G	RO												
			SD-02 Shop Drawings															
			Temporary Electrical System	1.7	G	RO												
		01525	SD-01 Preconstruction Submittals															
			Accident Prevention Plan (APP)	1.8	G	RO												
			Activity Hazard Analysis (AHA)	1.9	G	RO												
			Crane Critical Lift Plan	1.8.1	G	RO												
			Proof of qualification	3.2.3	G	RO												
			SD-06 Test Reports															
			Reports	1.13														
			Accident Reports	1.13.1														
			Monthly Exposure Reports	1.13.3														
			Regulatory Citations and Violations	1.13.4														
			Crane Reports	1.13.5														
		01720	SD-07 Certificates															
			Qualifications	1.3														

SUBMITTAL REGISTER

CONTRACT NO.
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TITLE AND LOCATION
Modify Spillway, Otter Brook Lake, Keene, NH

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01780	SD-02 Shop Drawings															
			As-Built Drawings	1.2.1	G	DO												
			SD-03 Product Data															
			As-Built Record of Equipment and	1.2.2	G	RO												
			Materials															
		02300	SD-01 Preconstruction Submittals															
			Blasting	1.7	G	DO												
			SD-02 Shop Drawings															
			Blast Monitoring Program	1.7.1	G	RO												
			SD-03 Product Data															
			Utilization of Excavated Materials	3.6	G	RO												
			Rock Excavation	1.6.2														
			SD-06 Test Reports															
			Seismograph Data Collection	1.7.2	G	RO												
		02950	SD-01 Preconstruction Submittals															
			Work Plan		G	DO												
			Wetland Restoration Specialist	1.2.1	G	DO												
			Plant Establishment Period															
			SD-07 Certificates															
			Fertilizer															
		03100	SD-02 Shop Drawings															
			Formwork	3.1.1	G	DO												
			SD-03 Product Data															
			Design	1.3	G	DO												
			Form Materials	2.1														
			Form Releasing Agents	2.1.4														

SUBMITTAL REGISTER

CONTRACT NO.
W912WJ-05-B-0005

TITLE AND LOCATION
Modify Spillway, Otter Brook Lake, Keene, NH

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		03152	SD-02 Shop Drawings															
			Rubber Seal;	2.1.1.1	G	DO												
			SD-03 Product Data															
			Washers	2.1.1.1														
			Bolts and Nuts	2.1.1.1														
			Epoxy-Resin Grout	2.1.1.1														
			Rubber Seal	2.1.1.1														
			SD-04 Samples															
			Rubber Seal	2.1.1.1	G	DO												
			SD-07 Certificates															
			Rubber Seal	2.1.1.1	G	DO												
		03200	SD-02 Shop Drawings															
			Reinforcement	3.1	G	DO												
			SD-03 Product Data															
			Welding	1.3														
			SD-07 Certificates															
			Reinforcing Steel	2.3	G	DO												
		03307	SD-03 Product Data															
			Air-Entraining Admixture	2.1.4.1														
			Accelerating Admixture	2.1.4.2														
			Water-Reducing or Retarding Admixture	2.1.4.3														
			Curing Materials	2.1.6														
			Batching and Mixing Equipment	3.1.4.2	G	DO												
			Conveying and Placing Concrete	3.2	G	DO												
			SD-06 Test Reports															

SUBMITTAL REGISTER

CONTRACT NO.
W912WJ-05-B-0005

TITLE AND LOCATION
Modify Spillway, Otter Brook Lake, Keene, NH

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		03307	Aggregates	2.1.3	G	DO												
			Concrete Mixture Proportions	1.3.3	G	DO												
			SD-07 Certificates															
			Cementitious Materials	2.1.2														
			Aggregates	2.1.3														
		03451	SD-03 Product Data															
			Cast-in embedded items, lifting	1.6	G	DO												
			devices, and connectors															
			SD-05 Design Data															
			design calculations	1.6	G	G												
			design calculations	1.6	G	G												
			Contractor-furnished mix design	2.1.1	G	DO												
			repair of surface defects	2.10	G	DO												
			SD-06 Test Reports															
			Strength tests	3.3.1.2	G	DO												
			SD-11 Closeout Submittals															
			batch ticket information	1.6	G	DO												
		05501	SD-03 Product Data															
			Bolts and Nuts	2.5	G	DO												
			washers	2.5	G	DO												
			Epoxy-Resin Grout	2.5	G	DO												
			Paint	1.5	G	DO												
			SD-07 Certificates															
			Welding Procedures	1.3														
			Welder Qualifications	1.3														

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01355

ENVIRONMENTAL PROTECTION

-- End of Section Table of Contents --

SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual
WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328	Definitions of Waters of the United States
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 68	Chemical Accident Prevention Provisions

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners,excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.5 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers,creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.6 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.7 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G, RO

The environmental protection plan.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

a. Name(s) of person(s) within the Contractor's organization who is (are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away.

h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

i. Drawing showing the location of borrow areas.

j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name and 24 hour telephone number of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department, as applicable, in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be

responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site. Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

o. A waste water management plan that identifies the methods and

procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, and dewatering of ground water,. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached,as an appendix, to the Environmental Protection Plan.

1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings,plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such

suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

This section supplements the Contractor's responsibility under the contract clause PERMITS AND RESPONSIBILITIES to the extent that the Government has already obtained the listed environmental permits issued for this project. A Wetlands Permit issued by the State of New Hampshire Department of Environmental Services; A Water Quality Certification; and an EPA Construction General Permit are being obtained for this project.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare

soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) as specified in Section 01356 STORM WATER POLLUTION PREVENTION MEASURES. BMPs may include, but not be limited to, vegetation cover, silt fences, interceptor channels, and diversion channels. Any temporary measures shall be removed after the area has been stabilized or at the direction of the Contracting Officer.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

3.3.1 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands, except as authorized herein. The Contractor shall be responsible for the protection of wetlands shown on the drawings in accordance with paragraph ENVIRONMENTAL PERMITS, REVIEWS, AND APPROVALS. Authorization to enter specific wetlands identified shall not relieve the Contractor from any obligation to protect other wetlands within, adjacent to, or in the vicinity of the construction site and associated boundaries.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type or other methods will be permitted to control particulates in the work area.

Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of New Hampshire rules.

3.4.4 Burning

Burning shall be prohibited on the Government premises.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.5.2 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations. Refueling shall not occur with 100 feet of wetlands or waterbodies, or appropriate precautions shall be taken.

3.5.3 Waste Water

Concreting coating, mixing, or application should not occur within wetlands

or waterbodies, or site-specific protection measures must be made to ensure protection of resource. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations.

3.6 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.7 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.8 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.9 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.10 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01356

STORM WATER POLLUTION PREVENTION MEASURES

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SECTION 01356

STORM WATER POLLUTION PREVENTION MEASURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4439	(2002) Geosynthetics
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

1.2 GENERAL

The Contractor shall implement the storm water pollution prevention measures specified in this section in a manner which will meet the requirements of Section 01355 ENVIRONMENTAL PROTECTION, and the requirements of the National Pollution Discharge Elimination System (NPDES) permit attached to that Section.

1.3 EROSION AND SEDIMENT CONTROLS

The controls and measures required by the Contractor are described below.

1.3.1 Stabilization Practices

The stabilization practices to be implemented may include temporary seeding, mulching, vegetative buffer strips, erosion control matts, protection of trees, preservation of mature vegetation, etc. On his daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where

construction activities have temporarily or permanently ceased.

1.3.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

1.3.1.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

1.3.2 Structural Practices

Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices. Location of installation and construction are shown on the drawings.

1.3.2.1 Silt Fences

The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences shall be installed in the locations indicated on the drawings. Final removal of silt fence barriers shall be upon approval by the Contracting Officer.

1.3.2.2 Straw Bales

The Contractor shall provide bales of straw as a temporary structural practice to minimize erosion and sediment runoff. Bales shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g., clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g., after clearing and grubbing in a area between a ridge and drain, bales shall be placed as work progresses, bales shall be removed/replaced/relocated as needed for work to progress in the drainage area). Areas where straw bales are to be used are shown on the drawings. Final removal of straw bale barriers shall be upon approval by the Contracting Officer.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network

such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet.

2.1.3 Mill Certificate or Affidavit

A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

2.2 COMPONENTS FOR STRAW BALES

The straw in the bales shall be stalks from oats, wheat, rye, barley, rice, or from grasses such as byhalia, bermuda, etc., furnished in air dry condition. The bales shall have a standard cross section of 14 inches by 18 inches. All bales shall be either wire-bound or string-tied. The Contractor may use either wooden stakes or steel posts to secure the straw bales to the ground. Wooden stakes utilized for this purpose, shall have a minimum dimensions of 2 inches x 2 inches in cross section and shall have a minimum length of 3 feet. Steel posts (standard "U" or "T" section) utilized for securing straw bales, shall have a minimum weight of 1.33

pounds per linear foot and a minimum length of 3 feet.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the Contracting Officer.

3.2 INSTALLATION OF STRAW BALES

Straw bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Straw bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After the bales are staked and chinked (gaps filled by wedging with straw), the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 4 inches against the uphill side of the barrier. Loose straw shall be scattered over the area immediately uphill from a straw bale barrier to increase barrier efficiency. Each bale shall be securely anchored by at least two stakes driven through the bale. The first stake or steel post in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or steel pickets shall be driven a minimum 18 inches deep into the ground to securely anchor the bales.

3.3 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

3.3.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade.

3.3.2 Straw Bale Maintenance

Straw bale barriers shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged bales, end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished promptly. Sediment deposits shall be removed when deposits reach one-half of the height of the barrier. Bale rows used to retain sediment shall be turned uphill at each end of each row. When a straw bale barrier is no longer required, it shall be removed. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade.

3.4 INSPECTIONS

3.4.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

3.4.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

3.4.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

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SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
E-mail: bkstore@concrete.org
Internet: http://www.aci-int.org

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
E-mail: info@aws.org
Internet: http://www.aws.org

ASME INTERNATIONAL (ASME)
Three Park Avenue
New York, NY 10016-5990
Ph: 212-591-7722
Fax: 212-591-7674
E-mail: infocentral@asme.org
Internet: http://www.asme.org

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555

E-mail: service@astm.org
Internet: http://www.astm.org

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
933 North Plum Grove Road
Schaumburg, IL 60173-4758
Ph: 847-517-1200
Fax: 847-517-1206
Internet: http://www.crsi.org/

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: 617-770-3000
Fax: 617-770-0700
E-mail: webmaster@nfpa.org
Internet: http://www.nfpa.org

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)
209 West Jackson Boulevard
Chicago, IL 60606-6938
Ph: 312-786-0300
Fax: 312-786-0353
E-mail: info@pci.org
Internet: http://www.pci.org

U.S. ARMY CORPS OF ENGINEERS (USACE)
Order CRD-C DOCUMENTS from:
U.S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section, Services Branch, TIC
3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Ph: 601-634-2664
Fax: 601-634-2388
E-mail: mtc-info@erdc.usace.army.mil
Internet: http://www.wes.army.mil/SL/MTC/handbook.htm

Order Other Documents from:
USACE Publications Depot
Attn: CEIM-SP-D
2803 52nd Avenue
Hyattsville, MD 20781-1102
Ph: 301-394-0081
Fax: 301-394-0084
E-mail: pubs-army@usace.army.mil
Internet: http://www.usace.army.mil/publications
or http://www.hnd.usace.army.mil/techinfo/engpubs.htm

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: http://www.archives.gov

Order documents from:
Superintendent of Documents

U.S.Government Printing Office
Washington, DC 20402-9325
Ph: 866-512-1800 or 202-512-1800
Fax: 202-512-2250
E-mail: gpoinfo@gpo.gov
Internet: http://www.gpo.gov

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01451

CONTRACTOR QUALITY CONTROL

-- End of Section Table of Contents --

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(2002) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 15 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 30 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified

deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 5 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The

Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a construction person with a minimum of three years in related work. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: civil, structural, environmental. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan.

Experience Matrix

	Area	Qualifications
a.	Civil	Graduate Civil Engineer with 2 years experience in the type of work being performed on this project or technician with 5 yrs related experience
b.	Structural	Graduate Structural Engineer with 2 yrs experience or person with 5 yrs related experience
c.	Environmental	Graduate Environmental Engineer with 3 yrs experience

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered at the New England District Office in Concord, MA..

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The

checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 General

Laboratories utilized by the Contractor for testing soils, aggregates, rock, concrete, and asphalt shall be inspected and validated by the Corps. The Contractor shall procure the services of a Corps validated commercial

laboratory or submit the Contractor's proposed laboratory for Corps approval and validation in accordance with section "Submittals". A list of Corps validated testing laboratories and the tests for which they are approved can be viewed at the USACE Material Testing Center (MTC) web site at: http://www.wes.army.mil/SL/MTC/mtc.htm.

3.7.2.2 Laboratory Validation

If the Contractor wishes to use a testing laboratory that is not currently validated, the proposed laboratory will be inspected by the MTC at the Government's expense. MTC lead times to complete the inspection and validation process can range from 60-90 days or more depending on the situation. The Contractor shall be advised that project delays resulting from the inspection process shall not be allowed to delay the construction schedule. The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.3 Laboratory Capability Recheck

If the selected laboratory fails the MTC capability check, the Contractor will be charged a fee to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Charges will be based on the price schedule located at http://www.wes.army.mil/SL/MTC/mtc.htm. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 Testing Laboratories

3.7.4 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory, if any, and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.5 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers District Office, 696 Virginia Road, Concord, MA 01742.

Coordination for each specific test, exact delivery location, and dates shall be made through the Resident Office.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph

DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List

of deficiencies noted, along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Offsite surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

Sample forms enclosed at the end of this section.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

DAILY CONSTRUCTION QUALITY CONTROL REPORT FOR WORK IN FEDERAL CHANNEL

Date:_____
Day:_____

Contract No:_____
Description and Location of Work:_____
_____
Weather:Temp: Cloud condition Wind speed/direction
Environmental Protection:
Management Area of responsibility
a. Consultant - _____
b. Contractor - _____
c. Subcontractor - _____
d. Surveyor - _____
e. Supplier - _____
f. Technical Support - _____

1. WORK PERFORMED TODAY (Indicate location and description of work performed. Refer to work performed by individuals listed by letter above.)_____
_____
_____
_____
_____
_____
_____

2. Results of Surveillance (Include satisfactory work completed, or deficiencies with action to be taken.)

a. Preparatory Inspection:_____
_____
_____
_____
b. Initial Inspection: _____
_____
_____
_____
c. Follow-up Inspection:_____
_____
_____
_____

3. Tests Required by Specifications, Performed, and the Results:

a. _____
b. _____
c. _____

4. Verbal Instruction Received; (List any instructions given by Government personnel on construction deficiencies, retesting required, etc. and action.)
_____
_____
_____
_____

5. Remarks: (Cover all conflicts in plans, specifications, or instructions.)

_____
_____
_____
_____

6. Safety Inspection (Report violations, corrective instruction given; and corrective actions taken.)

_____
_____
_____
_____

7. Quantities Completed;

Item # Quantity:	Item # Quantity:
Item # Quantity:	Item # Quantity:

8. Time

#	LABOR	HOURS	EQUIPMENT

9. Additional Comments:

_____
_____
_____
_____
_____
_____

Contractor's Verification: The above report is complete and correct and all material and equipment used and work performed during this reporting period are in compliance with the contract plans and specifications except as noted above.

_____
Contractor Quality Control Representative

Contractor/Sub. Name _____

-- End of Section --

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

-- End of Section Table of Contents --

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CORPS OF ENGINEERS (CE)

CE EM 385-1-1	(2003) Safety and Health Requirements Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Site Plan; G, RO.

Sketch of the proposed location and dimensions of any area to be used by the Contractor for storage and staging, the number of trailers to be used, avenues of ingress/egress to the areas and details of improvements.

SD-02 Shop Drawings

Temporary Electrical System; G, RO.

Sketch of the proposed temporary electrical system.

1.3 SITE PLAN

The Contractor shall prepare a site plan indicating the proposed location and dimensions of any storage and staging areas to be used by the Contractor, the number of trailers to be used, and avenues of ingress/egress to the areas. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired.

1.4 EMPLOYEE PARKING

Contractor employees shall park privately owned vehicles in an area approved by the Contracting Officer. Contractor employee parking shall not interfere with existing and established parking requirements of the facility.

1.5 AVAILABILITY OF UTILITIES

Provide service required for construction operations. All water and electricity that may be required in the prosecution of the work shall be furnished by the Contractor at his own expense. There will be no Government furnished water and electricity at the project site.

1.6 SANITATION

Adequate sanitary conveniences of a type approved for the use of persons employed on the work shall be provided, properly secluded from public observation, and maintained by the Contractor in such a manner as required or approved by the Contracting Officer. These conveniences shall be maintained at all times without nuisance. Upon completion of the work, the conveniences shall be removed by the Contractor from the premises, leaving the premises clean and free from nuisance.

1.7 TEMPORARY ELECTRICAL SYSTEM

All required temporary electrical equipment and lines shall be furnished, installed, connected, and maintained by the Contractor according to the CE EM 385-1-1, Section 11.D and shall be removed prior to final acceptance of the work. Temporary wiring shall conform to Article 305 of NFPA 70. Materials and equipment need not be new, but must be in good repair and serviceable condition. Prior to being energized, the systems and devices will be checked and approved for polarity, continuity of ground, and resistance to ground. Periodic inspections of systems and devices will be made by the Contractor at intervals not to exceed one (1) week.

1.8 TELEPHONE SERVICE

Provide telephone service to field offices. Provide and maintain a telephone or equal means of communication which will be in an easily accessible location at each of the large construction areas on the project. Such means of communication shall be accessible during all work hours.

1.9 PLANT COMMUNICATION

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The devices shall be made available for use by Government personnel.

1.10 BULLETIN BOARD AND PROJECT SAFETY SIGN

1.10.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and

other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

1.10.2 Safety Sign

The requirements for the sign shall be as shown on the drawings attached at the end of this section and as required by Section 01525 SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS. The sign shall be erected within 10 calendar days after commencement of work at the site. The Contracting Officer will will determine the location for erection of the signs. The data required by the safety sign shall be corrected daily, with light colored metallic or non-metallic numerals. Upon completion of the project, the sign shall be removed from the site.

1.11 CONTRACTOR'S TEMPORARY FACILITIES

1.11.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the construction area at the designated site. Government office facilities will not be available to the Contractor's personnel.

1.11.2 Storage and Staging Areas

Area is available for use by the Contractor, for work, storage of equipment, materials and trailers during the life of this contract. A site for Contractor storage and staging will be determined at the preconstruction conference, prior to commencing work. The Contractor shall confine his storage areas to the limits as designated or approved by the Contracting Officer and shall be responsible for the security of the areas. Upon completion of the contract, the Contractor shall remove all equipment and materials, except as otherwise specified, and restore the site to its original condition as approved by the Contracting Officer at no additional cost to the Government.

1.11.3 Supplemental Storage Area

Upon Contractor's request, the Contracting Officer will designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site. Fencing of materials or equipment will not be required at this site; however, the Contractor shall be responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area. Utilities will not be provided to this area by the Government.

1.11.4 Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on Government property.

1.11.5 Maintenance of Storage Area

Fencing, if used or required, shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse, with construction equipment or other vehicles, grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion.

1.11.6 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment.

1.12 GOVERNMENT FIELD OFFICE

1.12.1 Resident Engineer's Office

The Contractor shall provide the Government Resident Engineer with an office, approximately 200 square feet in floor area, located where directed and providing space heat, electric light and power, and toilet facilities consisting of one lavatory and one water closet complete with connections to water and sewer mains. A portable toilet may be substituted for the water closet. Provide three telephone lines for telephone, fax, and computer. A mail slot in the door or a lockable mail box mounted on the surface of the door shall be provided. At completion of the project, the office shall remain the property of the Contractor and shall be removed from the site. Utilities shall be connected and disconnected in accordance with local codes and to the satisfaction of the Contracting Officer.

1.12.2 Trailer-Type Mobile Office

The Contractor may, at its option, furnish and maintain a trailer-type mobile office acceptable to the Contracting Officer and providing as a minimum the facilities specified above. The trailer shall be securely anchored to the ground at all four corners to guard against movement during high winds.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

The Contractor shall maintain and protect traffic on all affected roads during the construction period, except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as necessary, given the Contractor's construction methods and as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.14 ACCESS AND HAUL ROADS

The Contractor shall, at its own expense, construct or improve access and haul roads necessary for proper prosecution of the work under this contract. Access and haul roads shall be constructed or improved with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, any newly constructed haul or access roads designated by the Contracting Officer shall be removed and the area restored to original condition. Improved access and haul roads shall remain in place.

1.15 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.16 Site Entrance

During operations involving Contractor equipment moving onto and off the project at the site entrance, Contractor shall provide signs, equipment, and personnel to protect and regulate traffic on the adjacent highway in accordance with State of New Hampshire regulations.

1.17 WARNING SIGNS

The Contractor shall construct, erect, and maintain warning signs at various locations, where directed, along the perimeter of the Contractor's work areas. These signs will generally be located where existing roads enter the work areas. The signs shall be securely mounted on wood posts, provided and installed by the Contractor. Lettering shall be of proper size for the intended use and shall be done by a sign painter. The following words shall appear on the sign:

DANGER

BLASTING OPERATIONS

TURN OFF ALL 2-WAY RADIOS

Wood signs shall be fastened to wood posts with not less than three 2-inch galvanized wood screws. Metal signs shall be installed in similar manner. The warning signs shall be erected prior to any blastingas. No separate payment will be made for erecting all signs and maintaining and removal of the warning signs when the entire work is completed, and all costs in connection therewith will be considered a subsidiary obligation of the Contractor.

1.18 CLEANING DURING CONSTRUCTION

1.18.1 Daily Cleaning

Execute daily cleaning to keep the work, the site, and adjacent properties free from accumulation of waste materials, rubbish, and windblown debris, resulting from construction operations.

1.18.2 On-Site Container

Provide on-site containers for the collection of waste materials, debris, and rubbish.

1.18.3 Removal of Waste

Remove waste materials, debris, and rubbish from the site periodically and dispose of off Government property in accordance with applicable laws and regulations.

1.18.4 Burning

No burning of brush or debris will be permitted at the site.

1.19 CLEANUP

Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away.

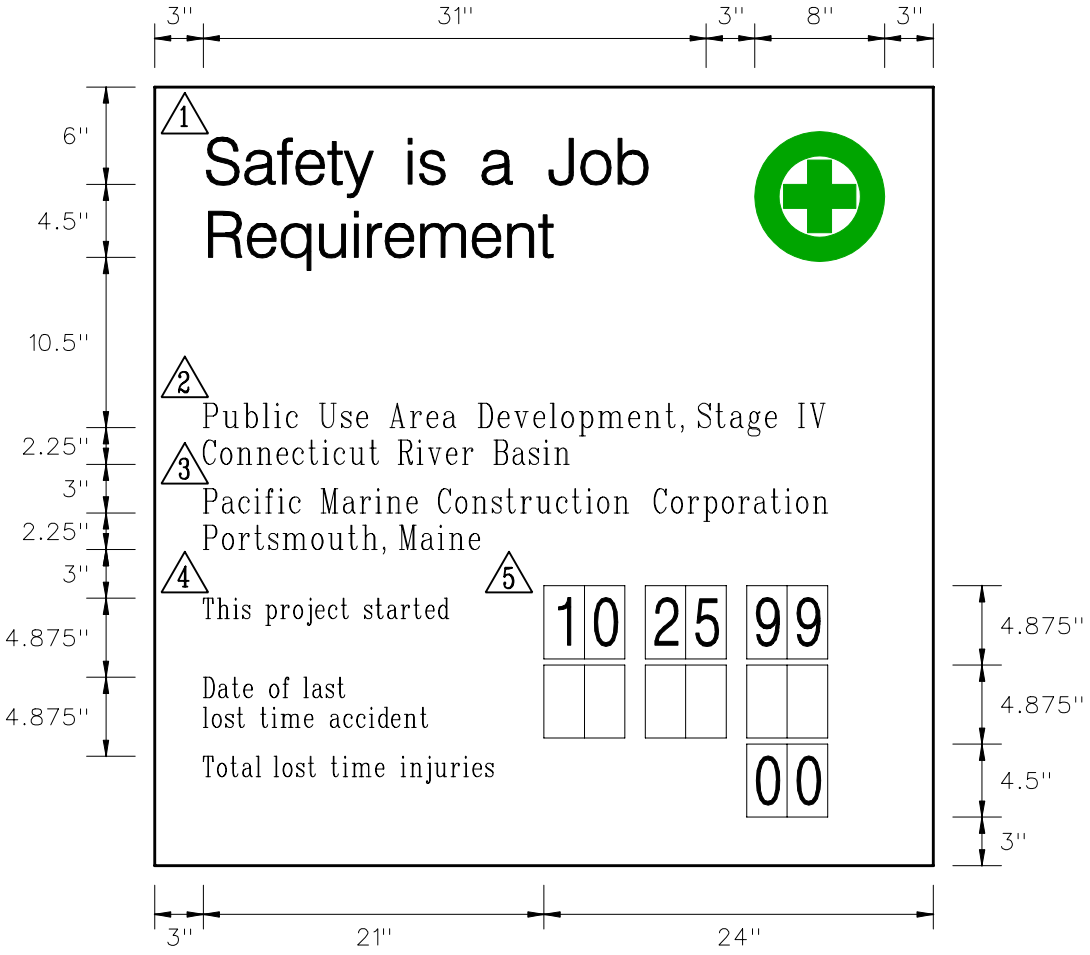
1.20 RESTORATION OF STORAGE AREA AND ACCESS AREAS

Upon completion of the project and after removal of trailers, materials, and equipment from within the storage area, the area shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

-- End of Section --



NOTES:
LEGEND GROUP

DESCRIPTION

1. Standard two-line title: "Safety is a Job Requirement" with (8"OD.) Safety Green First Aid logo. Color: To match PMS 347, Typeface: 3" Helvetica Bold, Color: Black.

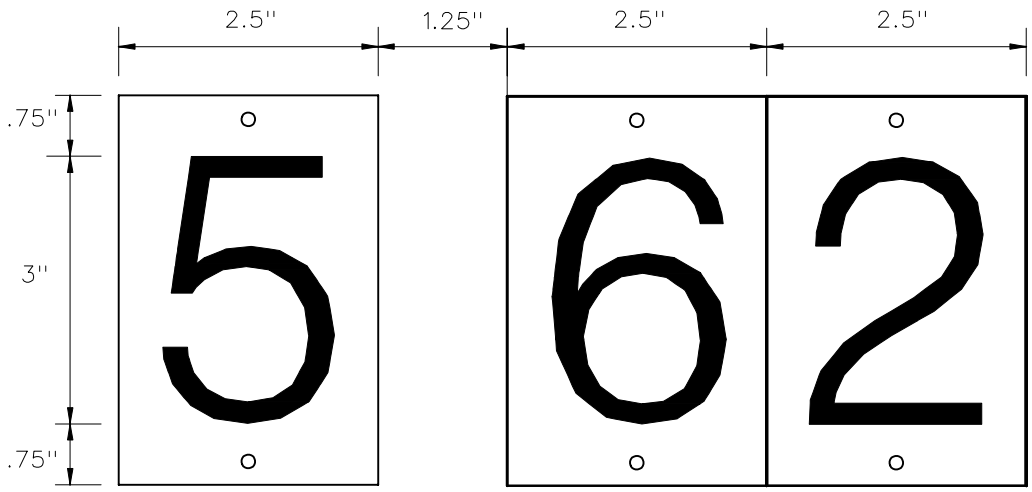
2. One-to two-line project title legend describes the work being done under this contract and name of host project. Color: Black, Typeface: 1.5" Helvetica Regular, Maximum line length: 42".

3. One-two-line identification: name of prime contractor and city, state address. Color: Black, Typeface: 1.5" Helvetica Regular, Maximum line length: 42".

4. Standard safety record captions as shown. Color: Black, Typeface: 1.25" Helvetica Regular.

5. Replaceable numbers are to be mounted on white .060 aluminum plates and screw-mounted to background. Color: Black, Typeface: 3" Helvetica Regular, Plate size: 2.5"x4.5".

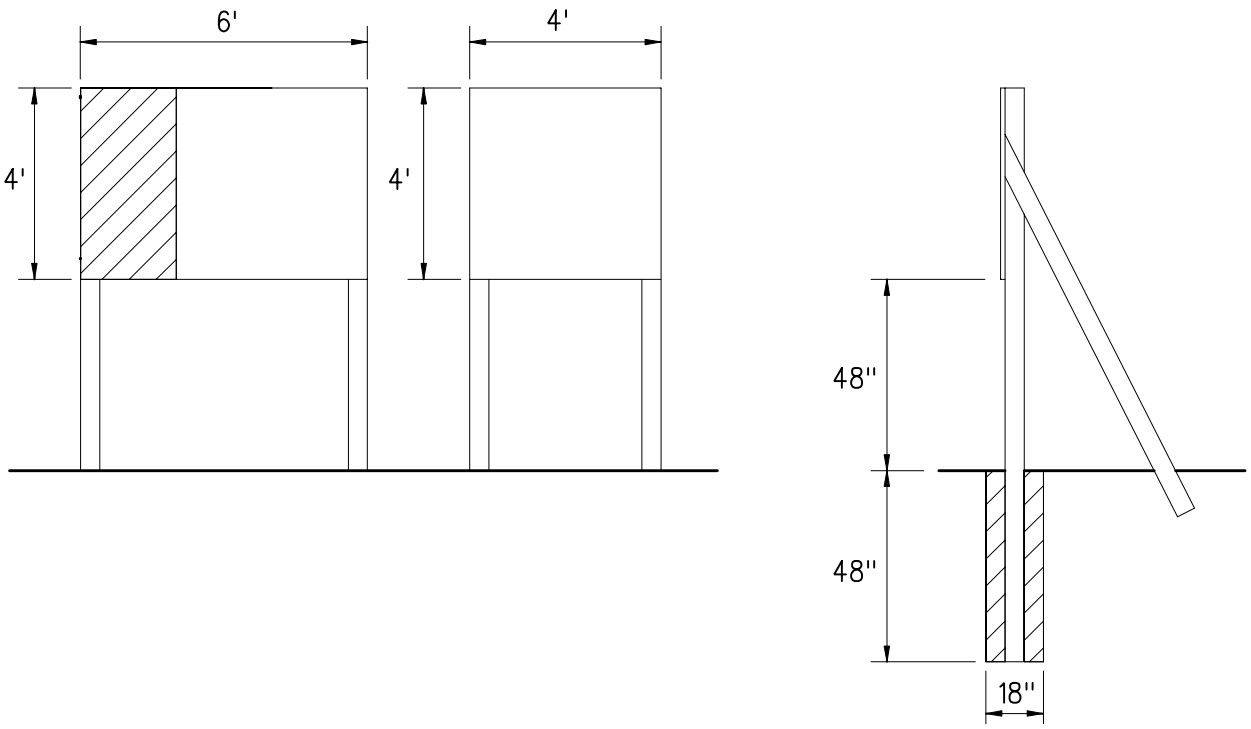
DEPARTMENT OF THE ARMY NEW ENGLAND DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS	STANDARD CONSTRUCTION DETAIL SAFETY PERFORMANCE SIGN DETAIL	1/2



NOTES:

1. Replace numbers are to be mounted on white .OLD aluminum plates and serew-mounted to background of Safety Performance Sign.

DEPARTMENT OF THE ARMY NEW ENGLAND DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS	STANDARD CONSTRUCTION DETAIL INDIVIDUAL METAL PLATES DETAIL	2 2



NOTES:

1 The sign panels are to be fabricated from .75" High Density Overlay Plywood. Panel preparation to follow HDO specifications provided in Appendix B.

2 Sign graphics to be prepared on a white non-reflective vinyl film with positionable adhesive backing.

3 All graphics except for the Communications Red background with Corps signature on the project sign are to be die-cut or computer-cut non-reflective vinyl, pre-spaced legends prepared in the sizes and typefaces specified and applied to the background panel following the graphic formats shown on pages 16.2-3.

4 The 2'x4' Communications Red panel (to match PMS-032) with full Corps signature (reverse version) is to be screen printed on the white background. Identification of the district or division may be applied under the signature with white cut vinyl letters prepared to Corps standards. Large scale reprouduction artwork for the signature is provided on page 4.8 (photographically enlarge from 6.875" to 10.5").

5 Drill and insert six (6) .375" T-nuts from the front face of the HDO sign panel. Position holes as shown. Flange of T-nut to be flush with sign face.

6 Apply graphic panel to prepared HDO plywood panel following manufacturers' instructions.

7 Sign uprights to be structural grade 4"x4" treated Douglas Fir or Southern Yellow Pine, No.1 or better. Post to be 12' long. Drill six (6) .375" mounting holes in uprights to align with T-nuts in sign panel. Countersink (.5") back of hole to accept socket head cap screw (4"x.375").

8 Assemble sign panel and uprights. Imbed assembled sign panel and uprights in 4' hole. Local soil conditions and/or wind loading may require bolting additional 2"x4" struts on inside face of uprights to reinforce installation as shown.

DEPARTMENT OF THE ARMY NEW ENGLAND DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS	STANDARD CONSTRUCTION DETAIL **FABRICATION AND MOUNTING GUIDELINES** MILITARY PROJECT	1 1

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

-- End of Section Table of Contents --

SECTION 01525

SAFETY AND OCCUPATIONAL HEALTH REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASME INTERNATIONAL (ASME)

ASME B30.22	(2000) Articulating Boom Cranes
ASME B30.5	(2000) Mobile and Locomotive Cranes

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 10	(2002) Portable Fire Extinguishers
NFPA 241	(2000) Safeguarding Construction,Alteration, and Demolition Operations
NFPA 70	(2002) National Electrical Code

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.94	Ventilation

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Accident Prevention Plan (APP); G, RO

Activity Hazard Analysis (AHA); G, RO

Crane Critical Lift Plan; G, RO

Proof of qualification for Crane Operators; G, RO

SD-06 Test Reports

Reports

Submit reports as their incidence occurs, in accordance with the requirements of the paragraph entitled, "Reports."

Accident Reports

Monthly Exposure Reports

Regulatory Citations and Violations

Crane Reports

1.3 DEFINITIONS

a. Associate Safety Professional (ASP). An individual who is currently certified as an ASP by the Board of Certified Safety Professionals.

b. Certified Construction Health & Safety Technician (CHST). An individual who is currently certified as a CHST by the Board of Certified Safety Professionals.

c. Certified Safety Professional (CSP). An individual who is currently certified as a CSP by the Board of Certified Safety Professionals.

d. Certified Safety Trained Supervisor (STS). An individual who is currently certified as an STS by the Board of Certified Safety Professionals.

e. High Visibility Accident. Any mishap which may generate publicity and/or high visibility.

f. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

g. Multi-Employer Work Site (MEWS). A multi-employer work site, as defined by OSHA, is one in which many employers occupy the same site. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors.

h. Operating Envelope. The area surrounding any crane. Inside this "envelope" is the crane, the operator, riggers, rigging gear between the hook and the load, the load and the crane's supporting structure (ground, rail, etc.).

i. Recordable Injuries or Illnesses. Any work-related injury or illness that results in:

(1) Death, regardless of the time between the injury and death, or the length of the illness;

(2) Days away from work;

(3) Restricted work;

(4) Transfer to another job;

(5) Medical treatment beyond first aid;

(6) Loss of consciousness; or

(7) A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (6) above.

i. Site Safety and Health Officer (SSHO). The superintendent or other qualified or competent person who is responsible for the on-site safety and health required for the project. The Contractor quality control (QC) person can be the SSHO on this project.

j. "USACE" property and equipment specified in USACE EM 385-1-1 should be interpreted as Government property and equipment.

k. Weight Handling Equipment (WHE) Accident. A WHE accident occurs when any one or more of the six elements in the operating envelope fails to perform correctly during operation, including operation during maintenance or testing resulting in personnel injury or death; material or equipment damage; dropped load; derailment; two-blocking; overload; and collision, including unplanned contact between the load, crane, and/or other objects. A dropped load, derailment, two-blocking, overload and collision are considered accidents even though no material damage or injury occurs. A component failure (e.g., motor burnout, gear tooth failure, bearing failure) is not considered an accident solely due to material or equipment damage unless the component failure results in damage to other components (e.g., dropped boom, dropped load, roll over, etc.).

1.4 REGULATORY REQUIREMENTS

In addition to the detailed requirements included in the provisions of this contract, work performed shall comply with USACE EM 385-1-1, and federal, state, and local, laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply.

1.5 DRUG PREVENTION PROGRAM

Conduct a proactive drug and alcohol use prevention program for all workers, prime and subcontractor, on the site. Ensure that no employee uses illegal drugs or consumes alcohol during work hours. Ensure there are no employees under the influence of drugs or alcohol during work hours. After accidents, collect blood, urine, or saliva specimens and test the injured and involved employees for the influence of drugs and alcohol. A copy of the test shall be made available to the Contracting Officer upon request.

1.6 SITE QUALIFICATIONS, DUTIES AND MEETINGS

1.6.1 Personnel Qualifications

1.6.1.1 Site Safety and Health Officer (SSHO)

Site Safety and Health Officer (SSHO) shall be provided at the work site at all times to perform safety and occupational health management, surveillance, inspections, and safety enforcement for the Contractor. The SSHO shall meet the following requirements:

Level 1:
Worked on similar projects.
10-hour OSHA construction safety class or equivalent within last 3 years.
Competent person training as needed.

1.6.1.2 Crane Operators

Crane operators shall meet the requirements in USACE EM 385-1-1, Section 16 and Appendix G. In addition, for mobile cranes with Original Equipment Manufacturer (OEM) rated capacitates of 50,000 pounds or greater, crane operators shall be designated as qualified by a source that qualifies crane operators (i.e., union, a government agency, or and organization that tests and qualifies crane operators). Proof of current qualification shall be provided.

1.6.2 Personnel Duties

1.6.2.1 Site Safety and Health Officer (SSHO)/Superintendent

a. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Safety inspection logs shall be attached to the Contractors' daily quality control report.

b. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.

c. Maintain applicable safety reference material on the job site.

d. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.

e. Implement and enforce accepted APPS and AHAs.

f. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. A list of unresolved safety and health deficiencies shall be posted on the safety bulletin board.

g. Ensure sub-contractor compliance with safety and health requirements.

Failure to perform the above duties will result in dismissal of the superintendent and/or SSHO, and a project work stoppage. The project work stoppage will remain in effect pending approval of a suitable replacement.

1.6.3 Meetings

1.6.3.1 Preconstruction Conference

a. The Contractor will be informed, in writing, of the date of the preconstruction conference. The purpose of the preconstruction conference is for the Contractor and the Contracting Officer's representatives to become acquainted and explain the functions and operating procedures of their respective organizations and to reach mutual understanding relative to the administration of the overall project's Accident Prevention Plan (APP) before the initiation of work.

b. Contractor representatives who have a responsibility or significant role in accident prevention on the project shall attend the preconstruction conference. This includes the project superintendent, site safety and health officer, quality control supervisor, or any other assigned safety and health professionals who participated in the development of the APP (including the Activity Hazard Analyses (AHAs) and special plans, program and procedures associated with it).

c. The Contractor shall discuss the details of the submitted APP to include incorporated plans, programs, procedures and a listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed at the conference and an agreement will be reached between the Contractor and the Contracting Officer's representative as to which phases will require an analysis. In addition, a schedule for the preparation, submittal, review, and acceptance of AHAs shall be established to preclude project delays.

d. Deficiencies in the submitted APP will be brought to the attention of the Contractor at the preconstruction conference, and the Contractor shall revise the plan to correct deficiencies and re-submit it for acceptance. Work shall not begin until there is an accepted APP.

1.6.3.2 Weekly Safety Meetings

Conduct weekly safety meetings at the project site for all employees. The Contracting Officer will be informed of the meeting in advance and be allowed attendance. Minutes showing contract title, signatures of attendees and a list of topics discussed shall be attached to the Contractors' daily quality control report.

1.6.3.3 Work Phase Meetings

The appropriate AHA shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection. The analysis should be used during daily inspections to ensure the implementation and effectiveness of safety and health controls.

1.7 TRAINING

1.7.1 New Employee Indoctrination

New employees (prime and sub-contractor) will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

1.7.2 Periodic Training

Provide Safety and Health Training in accordance with USACE EM 385-1-1 and the accepted APP. Ensure all required training has been accomplished for all onsite employees.

1.7.3 Training on Activity Hazard Analysis (AHA)

Prior to beginning a new phase, training will be provided to all affected employees to include a review of the AHA to be implemented.

1.8 ACCIDENT PREVENTION PLAN (APP)

The Contractor shall use a qualified person to prepare the written site-specific APP. Prepare the APP in accordance with the format and requirements of USACE EM 385-1-1 and as supplemented herein. Cover all paragraph and subparagraph elements in USACE EM 385-1-1, Appendix A, "Minimum Basic Outline for Preparation of Accident Prevention Plan". Where a paragraph or subparagraph element is not applicable to the work to be performed indicate "Not Applicable" next to the heading. Specific requirements for some of the APP elements are described below. The APP shall be job-specific and shall address any unusual or unique aspects of the project or activity for which it is written. The APP shall interface with the Contractor's overall safety and health program. Any portions of the Contractor's overall safety and health program referenced in the APP shall be included in the applicable APP element and made site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all work site safety and health of the subcontractors. Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out. The APP shall be signed by the person and firm (senior person) preparing the APP, the Contractor, the on-site superintendent, the designated site safety and health officer and any designated CSP and/or CIH.

Submit the APP to the Contracting Officer 10 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP. The Contracting Officer reviews and comments on the Contractor's submitted APP and accepts it when it meets the requirements of the contract provisions.

Once accepted by the Contracting Officer, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified.

Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the Contracting Officer, project superintendent, SSHO and quality control manager. Should any unforeseen hazard become evident during the performance of work, the project superintendent shall inform the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment.

Copies of the accepted plan will be maintained at the resident engineer's office and at the job site. The APP shall be continuously reviewed and amended, as necessary, throughout the life of the contract. Unusual or high-hazard activities not identified in the original APP shall be incorporated in the plan as they are discovered.

1.8.1 EM 385-1-1 Contents

In addition to the requirements outlined in Appendix A of USACE EM 385-1-1, the following is required:

a. Names and qualifications (resumes including education, training, experience and certifications) of all site safety and health personnel designated to perform work on this project to include the designated site safety and health officer and other competent and qualified personnel to be used. The duties of each position shall be specified.

b. Qualifications of competent and of qualified persons. As a minimum, competent persons shall be designated and qualifications submitted for each of the following major areas: excavation; personal protective equipment and clothing to include selection, use and maintenance.

e. Crane Critical Lift Plan. Prepare and sign weight handling critical lift plans for lifts over 75 percent of the capacity of the crane or hoist (or lifts over 50 percent of the capacity of a mobile crane's hoists) at any radius of lift; lifts involving more than one crane or hoist; lifts of personnel; and lifts involving non-routine rigging or operation, sensitive equipment, or unusual safety risks. The plan shall be submitted 15 calendar days prior to on-site work and include the requirements of USACE EM 385-1-1, paragraph 16.c.18.

f. Alcohol and Drug Abuse Plan

(1) Describe plan for random checks and testing with pre-employment screening in accordance with the DFAR Clause subpart 252.223-7004, "Drug Free Work Force."

(2) Description of the on-site prevention program

g. Training Records and Requirements. List of mandatory training and certifications which are applicable to this project (e.g. crane operation, vehicle operator, forklift operators, personal protective equipment); list of requirements for periodic retraining/certification; outline requirements for supervisory and employee safety meetings.

h. Excavation Plan. The safety and health aspects prepared in accordance with Section 02300 EARTHWORK.

1.9 ACTIVITY HAZARD ANALYSIS (AHA)

The Activity Hazard Analysis (AHA) format shall be in accordance with USACE EM 385-1-1, Section 01.A.13, Figure 1. Submit the AHA for review at least 15 calendar days prior to the start of each phase. Format subsequent AHA as amendments to the APP. An AHA will be developed by the Contractor for every operation involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform work. The analysis must identify and evaluate hazards and

outline the proposed methods and techniques for the safe completion of each phase of work. At a minimum, define activity being performed, sequence of work, specific safety and health hazards anticipated, control measures (to include personal protective equipment) to eliminate or reduce each hazard to acceptable levels, equipment to be used, inspection requirements, training requirements for all involved, and the competent person in charge of that phase of work. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include requirements for safeguarding excavations. An activity requiring an AHA shall not proceed until the AHA has been accepted by the Contracting Officer's representative and a meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activity, including on-site Government representatives. The Contractor shall document meeting attendance at the preparatory, initial, and follow-up phases of quality control inspection. The AHA shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.

Activity hazard analyses shall be updated as necessary to provide an effective response to changing work conditions and activities. The on-site superintendent, site safety and health officer and competent persons used to develop the AHAs, including updates, shall sign and date the AHAs before they are implemented.

The activity hazard analyses shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier or subcontractor and provided to the prime contractor for submittal to the Contracting Officer.

1.10 DISPLAY OF SAFETY INFORMATION

Within 10 calendar days after commencement of work, erect a safety sign at the job site. See Section 01500 TEMPORARY FACILITIES AND CONTROLS for sign construction information. The following information shall be displayed on the safety bulletin board in clear view of the on-site construction personnel, maintained current, and protected against the elements and unauthorized removal:

a. Map denoting the route to the nearest emergency care facility.

b. Emergency phone numbers.

c. Copy of the most up-to-date APP.

d. Current AHA(s).

e. OSHA 300A Form.

f. OSHA Safety and Health Protection-On-The-Job Poster.

g. Safety and Health Warning Posters.

1.11 SITE SAFETY REFERENCE MATERIALS

Maintain safety-related references applicable to the project, including those listed in the article "References." Maintain applicable equipment manufacturer's manuals.

1.12 EMERGENCY MEDICAL TREATMENT

Contractors will arrange for their own emergency medical treatment. Government has no responsibility to provide emergency medical treatment.

1.13 REPORTS

1.13.1 Accident Reports

a. For recordable injuries and illnesses, and property damage accidents resulting in at least $2,000 in damages, the Prime Contractor shall conduct an accident investigation to establish the root cause(s) of the accident, complete the USACE Accident Report Form 3394 and provide the report to the Contracting Officer within 1 calendar day of the accident. The Contracting Officer will provide copies of any required or special forms.

1.13.2 Accident Notification

Notify the Contracting Officer as soon as practical, but not later than four hours, after any accident meeting the definition of Recordable Injuries or Illnesses or High Visibility Accidents, property damage equal to or greater than $2,000, or any weight handling equipment accident. Information shall include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

1.13.3 Monthly Exposure Reports

Monthly exposure reporting to the Contracting Officer is required to be attached to the monthly billing request. This report is a compilation of employee-hours worked each month for all site workers, both prime and subcontractor. The Contracting Officer will provide copies of any special forms.

1.13.4 Regulatory Citations and Violations

Contact the Contracting Officer immediately of any OSHA or other regulatory agency inspection or visit, and provide the Contracting Officer with a copy of each citation, report, and contractor response. Correct violations and citations promptly and provide written corrective actions to the Contracting Officer.

1.13.5 Crane Reports

Submit crane inspection reports required in accordance with USACE EM 385-1-1, Appendix H and as specified herein with Daily Reports of Inspections.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 CONSTRUCTION AND/OR OTHER WORK

The Contractor shall comply with USACE EM 385-1-1, NFPA 241, the APP, the AHA, Federal and/or State OSHA regulations, and other related submittals and activity fire and safety regulations. The most stringent standard shall prevail.

3.1.1 Hazardous Material Use

Any work or storage involving hazardous chemicals or materials must be done in a manner that will not expose Government or Contractor employees to any unsafe or unhealthful conditions. Adequate protective measures must be taken to prevent Government or Contractor employees from being exposed to any hazardous condition that could result from the work or storage. The Prime Contractor shall keep a complete inventory of hazardous materials brought onto the work-site. Approval by the Contracting Officer of protective measures and storage area is required prior to the start of the work.

3.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material used in this contract, radioactive materials or instruments capable of producing ionizing/non-ionizing radiation (with the exception of radioactive material and devices used in accordance with USACE EM 385-1-1 such as nuclear density meters for compaction testing and laboratory equipment with radioactive sources) as well as materials which contain asbestos, mercury or polychlorinated biphenyls, di-isocynates, lead-based paint are prohibited. The Contracting Officer, upon written request by the Contractor, may consider exceptions to the use of any of the above excluded materials.

3.2 EQUIPMENT

3.2.1 Material Handling Equipment

a. Material handling equipment such as forklifts shall not be modified with work platform attachments for supporting employees unless specifically delineated in the manufacturer's printed operating instructions.

b. The use of hooks on equipment for lifting of material must be in accordance with manufacturer's printed instructions.

c. Operators of forklifts or power industrial trucks shall be licensed in accordance with OSHA.

3.2.2 Weight Handling Equipment

a. The Contractor shall notify the Contracting Officer 15 days in advance of any cranes entering the activity so that necessary quality assurance spot checks can be coordinated. Contractor's operator shall remain with the crane during the spot check.

b. The Contractor shall comply with the crane manufacturer's

specifications and limitations for erection and operation of cranes and hoists used in support of the work. Erection shall be performed under the supervision of a designated person (as defined in ASME B30.5). All testing shall be performed in accordance with the manufacturer's recommended procedures.

c. The Contractor shall comply with ASME B30.5 for mobile cranes, and ASME B30.22 for articulating boom cranes.

d. The presence of Government personnel does not relieve the Contractor of an obligation to comply with all applicable safety regulations. The Government will investigate all complaints of unsafe or unhealthful working conditions received in writing from contractor employees, or federal civilian employees.

e. Each load shall be rigged/attached independently to the hook/master-link in such a fashion that the load cannot slide or otherwise become detached. Christmas-tree lifting (multiple rigged materials) is not allowed.

f. Crane suspended personnel work platforms (baskets) shall not be used unless the Contractor proves that using any other access to the work location would provide a greater hazard to the workers or is impossible. Personnel shall not be lifted with a line hoist or friction crane.

g. A fire extinguisher having a minimum rating of 10BC and a minimum nominal capacity of 5lb of extinguishing agent shall be available at all operator stations or crane cabs. Portable fire extinguishers shall be inspected, maintained, and recharged as specified in NFPA 10, Standard for Portable Fire Extinguishers.

h. All employees shall be kept clear of loads about to be lifted and of suspended loads.

i. A weight handling equipment operator shall not leave his position at the controls while a load is suspended.

j. The Contractor shall use cribbing when performing lifts on outriggers.

k. The crane hook/block must be positioned directly over the load. Side loading of the crane is prohibited.

l. A physical barricade must be positioned to prevent personnel from entering the counterweight swing (tail swing) area of the crane.

m. A substantial and durable rating chart containing legible letters and figures shall be provided with each crane and securely mounted onto the crane cab in a location allowing easy reading by the operator while seated in the control station.

n. Certification records which include the date of inspection, signature of the person performing the inspection, and the serial number or other identifier of the crane that was inspected shall always be available for review by Contracting Officer personnel.

o. Written reports listing the load test procedures used along with any repairs or alterations performed on the crane shall be available

for review by Contracting Officer personnel.

p. The Contractor shall certify that all crane operators have been trained in proper use of all safety devices (e.g. anti-two block devices).

3.2.3 Equipment and Mechanized Equipment

a. Equipment shall be operated by designated qualified operators. Proof of qualifications shall be kept on the project site for review.

b. Manufacture specifications or owner's manual for the equipment shall be on-site and reviewed for additional safety precautions or requirements that are sometimes not identified by OSHA or USACE EM 385-1-1. Such additional safety precautions or requirements shall be incorporated into the AHAs.

c. Equipment and mechanized equipment shall be inspected in accordance with manufacturer's recommendations for safe operation by a competent person prior to being placed into use.

d. Daily checks or tests shall be conducted and documented on equipment and mechanized equipment by designated competent persons.

3.3 EXCAVATIONS

The competent person for excavations performed as a result of contract work shall be on-site when excavation work is being performed, and shall inspect, and document the excavations daily prior to entry by workers. The competent person must evaluate all hazards, including atmospheric, that may be associated with the work, and shall have the resources necessary to correct hazards promptly.

3.4 ELECTRICAL

3.4.1 Portable Extension Cords

Portable extension cords shall be sized in accordance with manufacturer ratings for the tool to be powered and protected from damage. All damaged extension cords shall be immediately removed from service. Portable extension cords shall meet the requirements of NFPA 70.

3.5 CRYSTALLINE SILICA

Grinding, abrasive blasting operations of construction materials containing crystalline silica, shall comply with OSHA regulations, such as 29 CFR 1910.94, and USACE EM 385-1-1, Appendix C. The Contractor shall develop and implement effective exposure control and elimination procedures to include dust control systems, engineering controls, and establishment of work area boundaries, as well as medical surveillance, training, air monitoring, and personal protective equipment.

3.6 HOUSEKEEPING

3.6.1 Clean-Up

All debris in work areas shall be cleaned up daily or more frequently if necessary. Construction debris may be temporarily located in an approved location, however garbage accumulation must be removed each day.

-- End of Section --

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01720

FIELD ENGINEERING

-- End of Section Table of Contents --

SECTION 01720

FIELD ENGINEERING

PART 1 GENERAL

1.1 SUMMARY

1.1.1 Engineering Services

The Contractor shall provide and pay for field engineering services required for the project, including the following:

a. Survey work required in execution of the project and for determining quantities of work performed for submission of progress payment requisitions.

b. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.

1.1.2 Existing Control Points

The Contracting Officer will identify existing control points indicated on the drawings, as required.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Qualifications

Name and address of the Surveyor and proof of registration.

1.3 QUALIFICATIONS

1.3.1 Registered Land Surveyor

Registered land surveyor, licensed in New Hampshire, and approved by the Contracting Officer.

1.4 LAYOUT OF WORK

a. The Government has established bench marks and horizontal control points at the site of the work. These are described and indicated on contract drawings.

b. From these control points the Contractor shall lay out the work by establishing all lines and grades at the site necessary to control the work and shall be responsible for all measurements that may be required for the

execution of the work to the location and limit marks prescribed in the specifications or on the contract drawings. The Contractor shall establish and maintain at the site of the work such stakes and markers as are necessary for control and guidance of his construction operations. All survey data shall be recorded in accordance with standard and approved methods. All field notes, sketches, recordings and computations made by the Contractor in establishing above horizontal and vertical control points shall be available at all times during the progress of the work for ready examination by the Contracting Officer or his duly authorized representative.

c. The Contractor shall furnish, at his own expense, all such stakes, spikes, steel pins, templates, platforms, equipment, tools and material and all labor as may be required in laying out any part of the work from the control points established by the Government. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other markers established by him until authorized to remove them. If any of the control points established at the site by the Government are destroyed by or through the negligence of the Contractor prior to their authorized removal, they may be replaced by the Contracting Officer, and the expense of replacement will be deducted from any amount due or which may become due the Contractor. The Contracting Officer may require that work be suspended at any time when horizontal and vertical control points established at the site by the Contractor are not reasonably adequate to permit checking the work. Such suspension will be withdrawn upon proper replacement of the control points.

d. During the layout of the work, the Contractor shall notify the Contracting Officer of any inconsistencies or conflicts which arise due to the supplied control points or features of the project.

1.5 QUANTITY SURVEYS

See Section 00800 SPECIAL CONTRACT REQUIREMENTS, Article QUANTITY SURVEYS. (APR 1984) ALTERNATE 1 FAR 52.236-16

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

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DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01780

CLOSEOUT SUBMITTALS

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SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

As-Built Drawings; G, DO

Drawings showing final as-built conditions of the project. The final CADD as-built drawings shall consist of one set of electronic CADD drawing files in the specified format, one set of mylar drawings, 2 sets of hard-copy prints of the mylars, and one set of the approved working as-built drawings.

SD-03 Product Data

As-Built Record of Equipment and Materials; G, RO

Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

1.2 PROJECT RECORD DOCUMENTS

1.2.1 As-Built Drawings

This paragraph covers as-built drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files," "working as-built drawings" and "final as-built drawings" refer to contract drawings which are revised to be used for final as-built drawings.

1.2.1.1 Government Furnished Materials

One set of electronic CADD files in the specified software and format revised to reflect all bid amendments will be provided by the Government at the preconstruction conference for projects requiring CADD file as-built drawings.

1.2.1.2 Working As-Built and Final As-Built Drawings

The Contractor shall revise 2 sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project. These working as-built marked drawings shall be kept current on a weekly basis and at least one set shall be available on the jobsite at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be

accurately and neatly recorded as they occur by means of details and notes. Final as-built drawings shall be prepared after the completion of each definable feature of work as listed in the Contractor Quality Control Plan. The working as-built marked prints and final as-built drawings will be jointly reviewed for accuracy and completeness by the Contracting Officer and the Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the working and final as-built drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the as-built drawings. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of updated drawings. The working and final as-built drawings shall show, but shall not be limited to, the following information:

a. The location and dimensions of any changes within the bridge structure.

b. Correct grade, elevations, cross section, or alignment of the bridge roadway or utilities if any changes were made from contract plans.

c. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details.

d. Changes or modifications which result from the final inspection.

e. Where contract drawings or specifications present options, only the option selected for construction shall be shown on the final as-built prints.

f. Modifications (change order price shall include the Contractor's cost to change working and final as-built drawings to reflect modifications) and compliance with the following procedures.

(1) Directions in the modification for posting descriptive changes shall be followed.

(2) A Modification Circle shall be placed at the location of each deletion.

(3) For new details or sections which are added to a drawing, a Modification Circle shall be placed by the detail or section title.

(4) For minor changes, a Modification Circle shall be placed by the area changed on the drawing (each location).

(5) For major changes to a drawing, a Modification Circle shall be placed by the title of the affected plan, section, or detail at each location.

(6) For changes to schedules or drawings, a Modification Circle shall be placed either by the schedule heading or by the change in the schedule.

(7) The Modification Circle size shall be 1/2 inch diameter unless the area where the circle is to be placed is crowded. Smaller size circle shall be used for crowded areas.

1.2.1.3 Drawing Preparation

The as-built drawings shall be modified as may be necessary to correctly show the features of the project as it has been constructed by bringing the contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints shall be neat, legible and accurate. These drawings are part of the permanent records of this project and shall be returned to the Contracting Officer after approval by the Government. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

1.2.1.4 Computer Aided Design and Drafting (CADD) Drawings

Only personnel proficient in the preparation of CADD drawings shall be employed to modify the contract drawings or prepare additional new drawings. Additions and corrections to the contract drawings shall be equal in quality and detail to that of the originals. Line colors, line weights, lettering, layering conventions, and symbols shall be the same as the original line colors, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings. Additions and corrections to the contract drawings shall be accomplished using CADD files. The Contractor will be furnished electronic digital (dgn) Microstation V8 format files done on a PC with a Windows 2000 operating system. The electronic files will be supplied on compact disc, read-only memory (CD-ROM). The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings. The Contracting Officer will review final as-built drawings for accuracy and the Contractor shall make required corrections, changes, additions, and deletions.

a. CADD colors shall be the "base" colors of red, green, and blue. Color code for changes shall be as follows:

Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes shall be in blue.

b. The Contract Drawing files shall be renamed in a manner related to the contract number (i.e., 04-C-10.DGN) as instructed in the Pre-Construction conference. Marked-up changes shall be made only to those renamed files. All changes shall be made on the layer/level as the original item. There shall be no deletions of existing lines; existing lines shall be over struck in red. Additions shall be in green with line weights the same as the drawing. Special notes shall be in blue on layer C-ANNO-REVS.

c. When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 3/16 inch high. All other contract drawings shall be marked either "AS-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

d. Within 10 days after Government approval of all of the working

as-built drawings for a phase of work, the Contractor shall prepare the final CADD as-built drawings for that phase of work and submit two sets of hard-copy prints of these drawings for Government review and approval. The Government will promptly return one set of prints annotated with any necessary corrections. Within 7 days the Contractor shall revise the CADD files accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Government. Within 10 of substantial completion of all phases of work, the Contractor shall submit the final as-built drawing package for the entire project. The submittal shall consist of one set of electronic files on compact disc, read-only memory (CD-ROM), one set of mylars, two sets of hard-copy prints and one set of the approved working as-built drawings. They shall be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any transactions or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with the New England District's CADD system. Paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit final as-built drawing files and marked prints as specified shall be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

1.2.1.5 Payment

No separate payment will be made for as-built drawings required under this contract, and all costs accrued in connection with such drawings shall be considered a subsidiary obligation of the Contractor.

1.2.2 As-Built Record of Equipment and Materials

The Contractor shall furnish one copy of preliminary record of equipment and materials used on the project 15 days prior to final inspection. This preliminary submittal will be reviewed and returned 2 days after final inspection with Government comments. Two sets of final record of equipment and materials shall be submitted 10 days after final inspection. The designations shall be keyed to the related area depicted on the contract drawings. The record shall list the following data:

RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA

Description	Specification Section	Manufacturer and Catalog, Model, and Serial Number	Composition and Size	Where Used

1.3 FINAL CLEANING

The site shall have waste, surplus materials, and rubbish removed. The project area shall have temporary structures, barricades, project signs, and construction facilities removed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

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DIVISION 02 - SITE CONSTRUCTION

SECTION 02300

EARTHWORK

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SECTION 02300

EARTHWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) Safety and Health Requirements Manual

1.2 ASSOCIATED WORK SPECIFIED ELSEWARE

See Section 01150 SPECIAL PROJECT PROCEDURES FOR FLOOD CONTROL.

1.3 DEFINITIONS

1.3.1 Satisfactory Materials

Satisfactory materials shall comprise all excavated materials meeting the weight or grain size requirements specified in this section.

1.3.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include trash; refuse; and material classified as satisfactory which contains root and other organic matter or frozen material. The Contracting Officer shall be notified of any contaminated materials.

1.3.3 Topsoil

Material suitable for topsoil obtained from offsite areas is defined as: Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

1.3.4 Rock

Solid homogeneous interlocking crystalline material with firmly cemented, laminated, or foliated masses or conglomerate deposits, neither of which can be removed without systematic drilling and blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers; also large boulders exceeding 1/2 cubic yard in volume.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Blasting; G, DO

Submit 15 days prior to starting work.

SD-02 Shop Drawings

Blast Monitoring Program; G, RO

At least 48 hours prior to blast detonation, the location of each blast shall be sketched on blast data sheets and forwarded to the Contracting Officer.

SD-03 Product Data

Utilization of Excavated Materials; G, RO
Rock Excavation

Procedure and location for disposal of unsatisfactory material. Advance notice on the opening of excavation areas.

SD-06 Test Reports

Seismograph Data Collection; G, RO

A record form for documenting these activities is attached at the end of this section.

1.5 SUBSURFACE DATA

Subsurface soil boring logs are appended to the end of this section. The subsoil investigation report may be examined at USACE, New England District Office, 696 Virginia Road, Concord, Massachusetts. The data represents the best subsurface information available; however, variations may exist in the subsurface between boring locations.

1.6 CLASSIFICATION OF EXCAVATION

Excavation specified shall be done on a classified basis, in accordance with the following designations and classifications.

1.6.1 Common Excavation

Common excavation shall include the satisfactory removal and disposal of all materials not classified as rock excavation.

1.6.2 Rock Excavation

Rock excavation shall include blasting, excavating, grading, and disposing

of material classified as rock and shall include the satisfactory removal and disposal of boulders 1/2 cubic yard or more in volume; solid rock; rock material that is in ledges, bedded deposits, and unstratified masses, which cannot be removed without systematic drilling and blasting; firmly cemented conglomerate deposits possessing the characteristics of solid rock impossible to remove without systematic drilling and blasting; and hard materials (see Definitions). If at any time during excavation, the Contractor encounters material that may be classified as rock excavation, such material shall be uncovered and the Contracting Officer notified by the Contractor. The Contractor shall not proceed with the excavation of this material until the Contracting Officer has classified the materials as common excavation or rock excavation and cross sections have been taken as required. Failure on the part of the Contractor to uncover such material, notify the Contracting Officer, and allow ample time for classification and cross sectioning of the undisturbed surface of such material will cause the forfeiture of the Contractor's right of claim to any classification or volume of material to be paid for other than that allowed by the Contracting Officer for the areas of work in which such deposits occur.

1.6.3 Concrete Excavation

Excavation of the existing concrete spillway shall include blasting, excavating, and off sight disposal of material classified as concrete. The existing anchors shown on the drawings shall remain in place to the extent practicable.

1.7 BLASTING

a. Blasting shall be performed in accordance with EM 385-1-1 and in conformance with Federal, State, and local safety regulations. The Contractor shall submit a Blasting Plan, prepared and sealed by a registered professional engineer that includes calculations for overpressure and debris hazard control. The Blasting Plan shall include the Blasting Safety Plan information required by EM 385-1-1. A Blast Monitoring Program for monitoring of ground vibrations and air overpressures shall be included. Blasting mats shall be provided and non-electric blasting caps shall be used. The Contractor shall obtain written approval prior to performing any blasting and shall notify the Contracting Officer 24 hours prior to blasting. The plan shall contain provisions for storing, handling and transporting explosives as well as for the blasting operations. The Contractor shall be responsible for damage caused by blasting operations.

b. The blasting plan shall include requirements for fragmenting rock utilizing controlled blasting techniques such that damage is prevented to adjacent wetlands and wildlife, structures, utilities, property and work and such that resulting ground vibrations and air blast over pressures are consistently maintained below the maximum levels specified in this section.

1.7.1 Blast Monitoring Program

a. The purpose of the blast monitoring program is to ensure that the blasting plan submitted will produce acceptable results, in accordance with the requirements herein with regard to peak particle velocity and air blast overpressures.

b. At least 48 hours prior to blast detonation, the location of each blast shall be sketched on blast data sheets and forwarded to the Contracting Officer. Include all data on the following items:

1. Blast hole diameters

2. Loading in each hole and total round

3. Sketch of the hole loading

4. Sketch of the blast pattern with numbered delays

5. Date and time of detonation

c. Adjacent and nearby structures shall be monitored during blasting using seismographs as specified herein. Structures to be monitored shall include, as a minimum, the dam service bridge center pier, the dam tower, and the dam office building. The Contractor shall also monitor any other structures or facilities he deems necessary.

d. Seismograph readings for all adjacent and nearby elements shall be within the response values specified in this section.

1.7.2 Seismograph Data Collection

The Contractor shall collect seismograph data prior to any blasting to document background vibrations, and also at the start of blasting to establish the maximum energy which can be used without surpassing acceptable vibration and overpressure levels at nearby structures and facilities. A minimum of 8 hours of background monitoring at the nearest monitoring locations (dam service bridge, dam tower and dam office building) shall be performed. Monitoring during blasting operations shall consist of recording single component peak particle velocities, overpressure levels, and corresponding frequencies, to obtain full waveform data. Monitoring during blasting shall be performed at the three structures mentioned above, as well as at any other locations deemed necessary by the Contractor. Both continuous monitoring and full waveform data shall be recorded and submitted in paper and electronic formats. During all monitoring of blasting activities the Contractor shall document all relevant events and submit the documentation to the Contracting Officer with the data. A record form for documenting these activities is attached at the end of this section.

1.7.3 Controlled Blasting

The various elements of each blast shall be controlled, including hole size, position, alignment, depth, spacing, burden, charge size, distribution and delay sequence, to excavate the rock to the desired lines and to minimize damage to the remaining intact rock, while maintaining resulting ground vibrations and air blast over pressure within specified maximum limits. The planned extent of any production phase blasting round shall be such that all above criteria are met, and in no case shall exceed 75 feet in length. Blasting mats shall be used at all locations to prevent flyrock and reduce dust migration.

1.7.4 Line Drilling

Line drilling shall consist of drilling a single row of very closely spaced holes, leaving the holes unloaded, having a suitable burden/spacing ratio, a reduced explosive charge in the line of holes nearest to the line-drilled holes, and a limit on the distance between the line-drilled holes and the nearest line of primary blast holes.

1.7.5 Preconstruction Photographs

The Contractor shall document the condition of the nearby structures and areas prior to the start of construction. Still high resolution digital photos and/or videos shall, as a minimum cover the exterior and interior of the service bridge and the tower, the inlet and outlet structures, the exterior and interior of the dam office and utility buildings, and the wetland areas immediately adjacent to the construction site, as directed by the Contracting Officer. Photos or videos should cover the entire building facades and interiors in sufficient detail and resolution to document all features such as joints and existing cracks (if any), and shall be accompanied by a typed index of the photos/video clips, to the satisfaction of the Contracting Officer. One copy of all photos (both on film and on CDs) and/or videotapes shall be delivered to the Contracting Officer at least one week prior to the start of construction.

1.7.6 Blasting Time Limitations

Blasting shall be limited to between the hours of 9:00 a.m and 5:00 p.m., Monday through Friday, unless prior written permission is received from the Contracting Officer to blast at other times. The exact times when blasting will be permitted shall be coordinated with the Contracting Officer.

PART 2 PRODUCTS

2.1 MATERIAL FOR RIP-RAP

Provide blasted rock from required excavation conforming to the requirements indicated.

2.1.1 Rock for Disposal at Existing Dike

a. Rock fragments excavated from the spillway area shall be used to augment and extend the existing dike as shown on the drawings, subject to the size requirements stated herein. Oversized excavated rock fragments shall be broken up to meet the stated size requirements at the Contractor's expense. Concrete fragments from the demolition of the existing spillway will not be permitted in the dike construction. The size of the fragments used for the dike shell shall be such that no individual fragment exceeds a weight of 400 pounds and that no more than 10 percent of the mixture, by weight, consists of fragments weighing 10 pounds or less each. Fifty percent of the fragments shall weigh between 200 and 300 pounds. Elongated fragments with a length to breadth ratio greater than 3 shall not be used.

b. Rock fragments not suitable for inclusion in the dike shell shall be used for construction of the dike core. Maximum rock size in the dike core shall be 6 inches, and the maximum amount of material passing the No.200 sieve used in the core shall not exceed 25%. The material used for the dike core shall be blended on site to form a well graded material and avoid pockets of fine-grained, uniform-sized materials.

c. Inclusion of organic material, construction debris, and other deleterious materials in the shell and core of the dike will not be permitted. In addition, the inclusion of more than 5% of clay in the dike core material will not be permitted.

PART 3 EXECUTION

3.1 GENERAL EXCAVATION

The Contractor shall perform excavation of every type of material encountered within the limits of the project to the lines, grades, and elevations indicated and as specified. Grading shall be in conformity with the typical sections shown and the tolerances specified in paragraph FINISHING. Satisfactory excavated materials shall be transported to and placed in fill or embankment within the limits of the work. Surplus satisfactory excavated material not required for fill or embankment shall be disposed of in areas approved for surplus material storage or designated waste areas. Unsatisfactory excavated material shall become the property of the Contractor and disposed of off site. During construction, excavation and fill shall be performed in a manner and sequence that will provide proper drainage at all times.

3.2 TEST BLASTS

a. At the start of blasting, the Contractor shall perform a series of test blasts to establish a site-specific relationship between the charge weight per delay and peak ground vibration levels at various distances from the blast. Similar relationships shall be developed for air blast overpressures.

b. The test blasts shall consist of a series of blasts with increasing charge weights. The charge weight for the initial test blast shall be less than the charge weight estimated to produce a peak particle velocity of 0.5 inch per second at the nearest structure (the dam service bridge).

c. The test blasts will be monitored and evaluated by the Contractor and shall form the basis for selection of maximum permissible charge weights during production blasting.

d. The relationships developed from the test blasts shall be updated and modified as blasting proceeds based on the monitoring data obtained during production blasting.

e. After the removal of the concrete spillway and prior to commencing full-scale blasting operations in rock, the Contractor shall demonstrate the adequacy of the proposed blasting plan by drilling, blasting, and excavating a short trial section, up to 25 ft in length, to determine which combination of method, hole spacing, and charge works best. Requirements for controlled and production-blasting operations covered elsewhere in this specification shall also apply to the blasting carried out in conjunction with the test blasts and the trial section.

f. The Contractor will not be allowed to drill ahead of the trial section until the trial section has been excavated and the results evaluated by the Contracting Officer. If the results of the trial section, in the opinion of the Contracting Officer are unsatisfactory, then the Contractor shall adopt such revised methods as are necessary to achieve the required results. Unsatisfactory trial section results include an excessive amount of fragmentation beyond the indicated lines and grade, excessive flyrock, and/or violation of other requirements within these specifications.

3.3 BLASTING CONTROL CRITERIA

Maximum allowable peak particle velocities (PPV) experienced at monitored

locations shall be as follows:

	Freq. (HZ)	PPV (inches per second)
Threshold Value:	0-20	0.25
	20-60	0.5
Limiting Value:	0-20	0.5
	20-60	0.75

Maximum allowable air overpressure experienced at monitored locations shall be as follows:

	Threshold Value	Limiting Value
Air Overpressure	125 dB	130 dB

These values shall be defined collectively as Response Values. The actions associated with these Response Values are defined below. Response Values are subject to adjustment by the Contracting Officer as indicated by prevailing conditions or circumstances.

If a Threshold Value is reached the Contractor shall:

1. Meet with the Contracting Officer to discuss his proposed plan of action(s) so that the Limiting Value is not reached.

2. Implement the reviewed plan of action so that the Limiting Value is not reached.

3. Perform additional monitoring if directed by the Contracting Officer, at no cost to the Government.

The Contractor shall take all necessary steps so that the Limiting Value is not exceeded. Contractor may be directed to suspend activities in the affected area with the exception of those actions necessary to avoid exceeding the Limiting Value, should the Limiting Value be reached, at no cost to the Government.

If a Limiting Value is reached, the Contractor shall:

1. Cease all blasting operations.

3. Meet with the Contracting Officer to discuss his revised plan of action(s) so that the Limiting Value is not reached.

4. Implement his reviewed revised plan of action so that the Limiting Value is not reached.

5. Perform additional monitoring if directed by the Contracting Officer, at no cost to the Government.

3.4 GRADING AREAS

Where indicated, work will be divided into grading areas within which satisfactory excavated material shall be placed in the dike embankment. Stockpiles shall be kept in a neat and well drained condition. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the

Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources.

3.5 FINAL GRADE OF SURFACES TO SUPPORT CONCRETE

Excavation to final grade shall not be made until just before concrete is to be placed. Only excavation methods that will leave the foundation rock in a solid and unshattered condition shall be used. Approximately level surfaces shall be roughened, and sloped surfaces shall be cut as indicated into rough steps or benches to provide a satisfactory bond. All surfaces shall be protected from erosion resulting from ponding or flow of water.

3.6 UTILIZATION OF EXCAVATED MATERIALS

Unsatisfactory materials removed from excavations shall become the property of the Contractor and disposed of off site. Satisfactory material removed from excavations shall be used, to the maximum possible extent, in the construction of the dike as shown on the drawings. No satisfactory excavated material shall be wasted without specific authorization.

3.7 ROCK FOUNDATION CLEANUP

When the excavation has reached the limits shown or when the Contracting Officer determines that a satisfactory foundation may have been reached, the Contractor shall conduct a cleanup of the existing anchors and all of the rock foundation surface. This cleanup shall consist of removing all debris, loose rock, sand, silt, and other objectionable material by hand tools followed by water jets or any combination of additional methods approved or directed. The Contracting Officer may require that the excavation be continued and the cleanup procedures repeated until a satisfactory foundation surface is reached.

3.8 Water Jet

A water jet shall consist of a 1 inch nozzle with a supply hose connected to a suitable source of water. The system shall be capable of delivering up to 200 gpm. The flow rate shall be controllable at the nozzle.

3.9 SPECIAL REQUIREMENTS

Special requirements for both excavation fills are as follows:

3.9.1 Dike Construction

Construct rock dike in the areas indicated. Trim and dress indicated areas to conform to cross sections, lines and grades shown within a tolerance of 1.0 foot.

3.9.1.1 Stone Placement on Existing Dike

Remove loose debris, wood, shrubs and trees from the areas of the existing dike and the areas of the dike extension to receive layers of blasted rock from the required excavations. Where new dike material is placed over natural undisturbed materials, the subgrade shall be stripped of topsoil and other unsuitable materials for at least 12 inches to expose suitable foundation material. Place excavated rock on the existing dike to produce a well graded shell with the minimum practicable percentage of voids in conformance with lines and grades indicated. Distribute larger rock

fragments, such that the longer dimension lies perpendicular to the slope and eliminate "pockets" of small rock fragments. Rearrange individual pieces by mechanical equipment or by hand as necessary to obtain the distribution of fragment sizes specified above. In areas of new dike construction, core material shall be placed in 18" maximum loose layer thickness and compacted with 6 passes of a vibrating drum roller weighing 10,000 pounds at the drum, prior to placement of the rock shell. In sloping ground the fill lifts shall be benched into the slope to allow for proper placement and compaction in horizontal layers.

3.10 FINISHING

The surface of excavations, embankments, and subgrades shall be finished to a smooth and compact surface in accordance with the lines, grades, and cross sections or elevations shown. The degree of finish for graded areas shall be within 0.1 foot of the grades and elevations indicated. Gutters and ditches shall be finished in a manner that will result in effective drainage. The surface of areas to be turfed shall be finished to smoothness suitable for the application of turfing materials. Settlement or washing that occurs in graded topsoiled areas prior to acceptance of the work, shall be repaired and grades re-established to the required elevations and slopes.

3.10.1 Grading Around Structures

Areas within 5 feet outside of the completed spillway structure line shall be constructed true-to-grade, shaped to drain, and shall be maintained free of trash and debris until final inspection has been completed and the work has been accepted.

3.11 PLACING TOPSOIL

All disturbed areas, not specified to receive other treatment, shall be graded as directed and receive topsoil and seeding. The Upland Seed Mixture specified in Section 02950 WETLANDS MITIGATION AREA shall be used as directed. The compacted subgrade soil shall be scarified to a 2 inch depth for bonding of topsoil with subsoil. Topsoil then shall be spread evenly to a thickness of 6 inches and graded to the elevations and slopes shown. Topsoil shall not be spread when frozen or excessively wet or dry. Material required for topsoil shall be obtained from offsite areas.

3.12 DISPOSITION OF SURPLUS MATERIAL

Surplus material or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber shall be removed from Government property as directed by the Contracting Officer.

CONSTRUCTION VIBRATION MONITORING FIELD DATA FORM

Contract Number:
Contract Name:
Contractor:
Observer:

Seismograph Information

Manufacturer and Model:
Serial Number:
Factory Calibration Date:

Monitoring Location

Location:
Distance to Source:

Sensor Location (describe location and attach sketch)

Data Collection (check applicable type and attach data)

¨ Full Waveform (for blasting and start of construction monitoring)
¨ 1 minute ppv Strip Chart (during construction activities or other events that could influence changes in the data)

Monitoring Period (date and time) Start:
End:

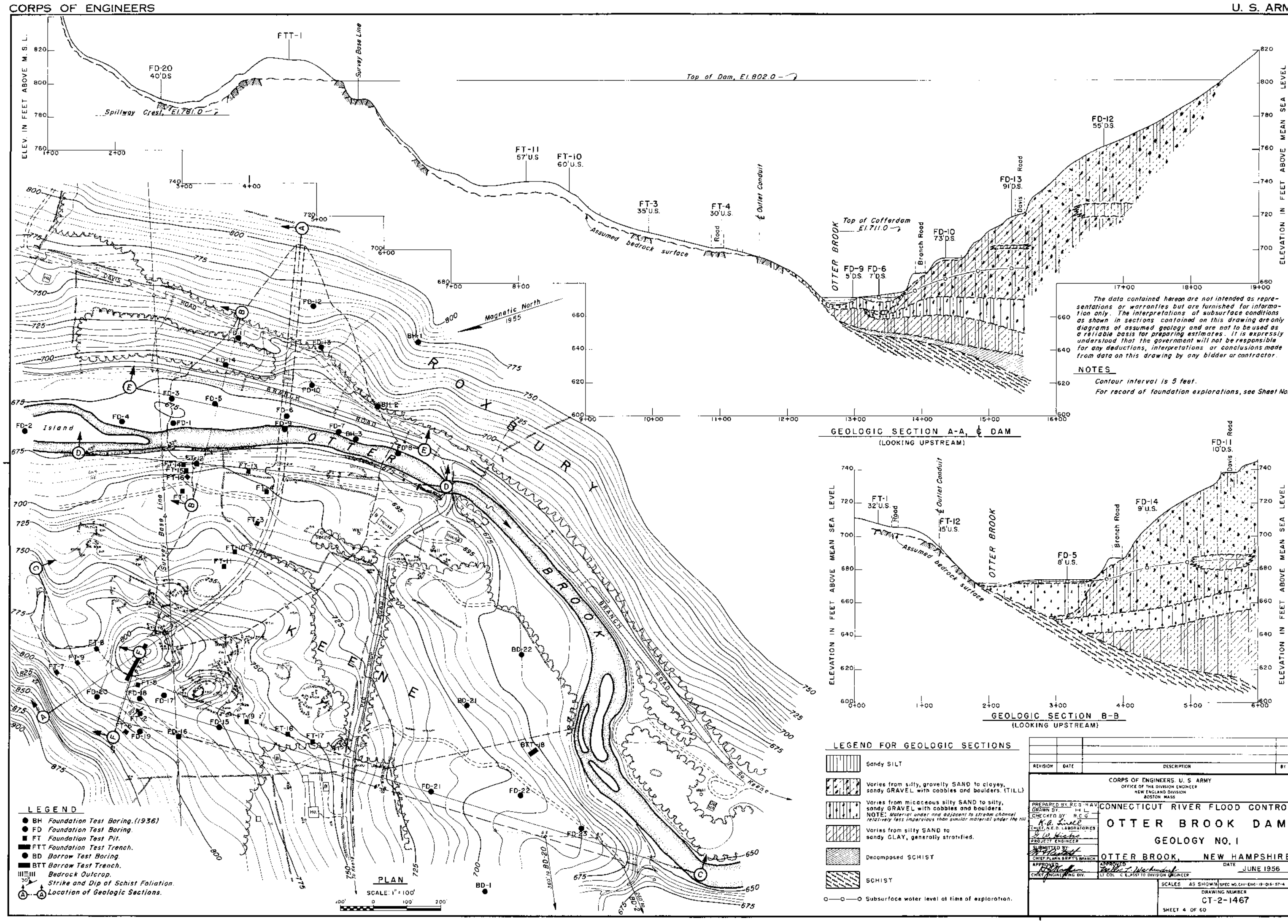
Data

Date	Time	Blasting Details & Relevant Events	Distance from Sensor (ft)	Peak Particle Velocity (in./sec)	Frequency (Hz)	Air Overpressure (db)

Attach additional sheets as necessary

-- End of Section --

CORPS OF ENGINEERS — U. S. ARMY



The data contained hereon are not intended as representations or warranties but are furnished for information only. The interpretations of subsurface conditions as shown in sections contained on this drawing are only diagrams of assumed geology and are not to be used as a reliable basis for preparing estimates. It is expressly understood that the government will not be responsible for any deductions, interpretations or conclusions made from data on this drawing by any bidder or contractor.

NOTES

Contour interval is 5 feet.

For record of foundation explorations, see Sheet No. 6

LEGEND

- BH Foundation Test Boring. (1936)
- FD Foundation Test Boring.
- FT Foundation Test Pit.
- FTT Foundation Test Trench.
- BD Borrow Test Boring.
- BTT Borrow Test Trench.
- Bedrock Outcrop.
- Strike and Dip of Schist Foliation.
- Location of Geologic Sections.

LEGEND FOR GEOLOGIC SECTIONS

- Sandy SILT
- Varies from silty, gravelly SAND to clayey, sandy GRAVEL with cobbles and boulders. (TILL)
- Varies from micaceous silty SAND to silty, sandy GRAVEL with cobbles and boulders. NOTE: *Material under and adjacent to stream channel relatively less impervious than similar material under the till*
- Varies from silty SAND to sandy CLAY, generally stratified.
- Decomposed SCHIST
- SCHIST
- o—o—o Subsurface water level at time of exploration.

REVISION	DATE	DESCRIPTION	BY

CORPS OF ENGINEERS. U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

PREPARED BY: R.C.G.-H.A.V.
DRAWN BY: H.L.
CHECKED BY: R.C.G.
K.A. Linell — CHIEF, N.E.D. LABORATORIES
G.W. Hicks — PROJECT ENGINEER
SUBMITTED BY: [signature] — CHIEF, PLANN. & SPEC'S BRANCH
APPROVED: [signature] — CHIEF, ENGINEERING DIV.

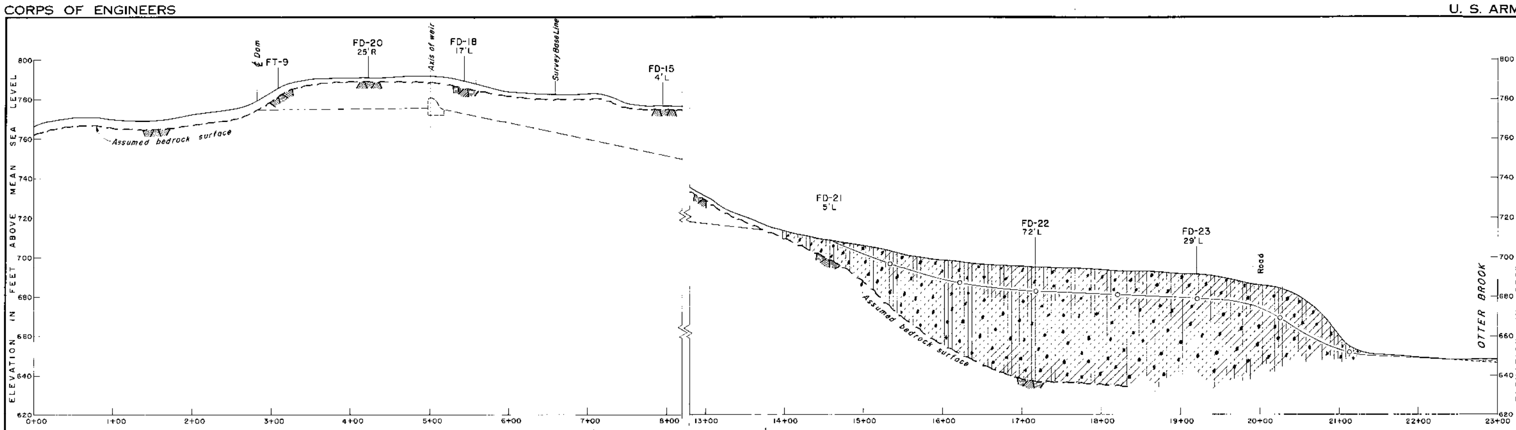
CONNECTICUT RIVER FLOOD CONTROL
OTTER BROOK DAM
GEOLOGY NO. 1
OTTER BROOK, NEW HAMPSHIRE

APPROVED: [signature] — LT. COL. C.E., ASST. TO DIVISION ENGINEER
DATE: JUNE 1956

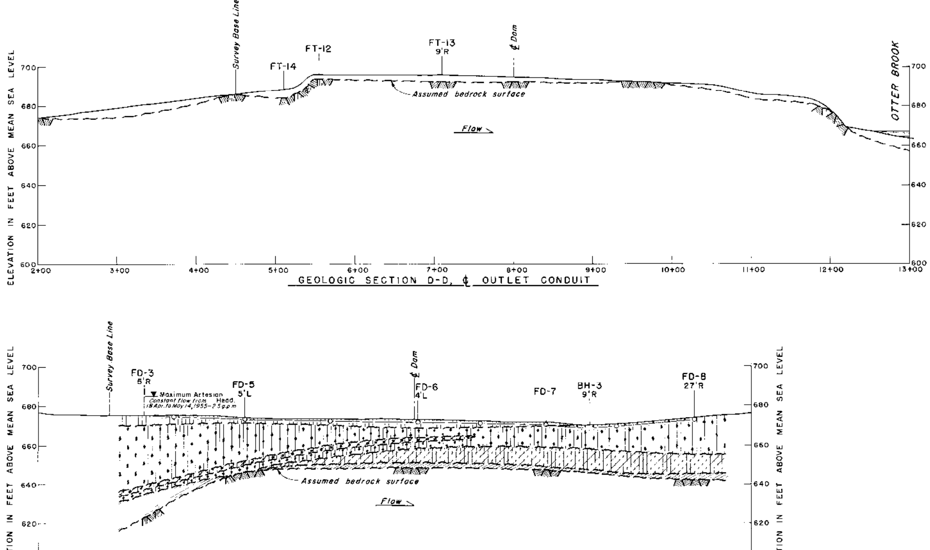
SCALES: AS SHOWN — SPEC. NO. CIV-ENG-19-016-57-4
DRAWING NUMBER: CT-2-1467
SHEET 4 OF 60

4

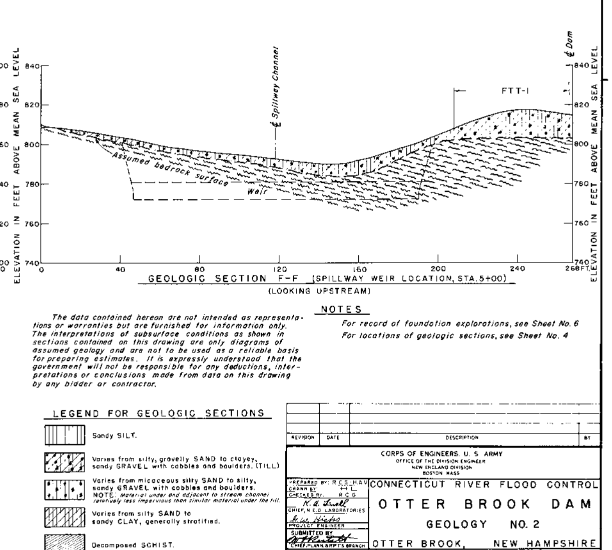
CORPS OF ENGINEERS — U. S. ARMY



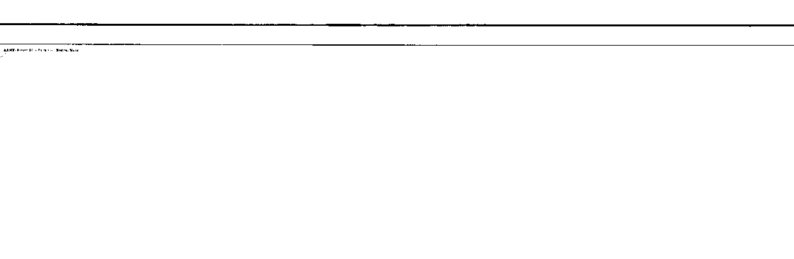
GEOLOGIC SECTION C-C, ℄ SPILLWAY CHANNEL



GEOLOGIC SECTION D-D, ℄ OUTLET CONDUIT



GEOLOGIC SECTION F-F (SPILLWAY WEIR LOCATION, STA. 5+00)
(LOOKING UPSTREAM)



GEOLOGIC SECTION E-E (LEFT RIVER BANK)

The data contained hereon are not intended as representations or warranties but are furnished for information only. The interpretations of subsurface conditions as shown in sections contained on this drawing are only diagrams of assumed geology and are not to be used as a reliable basis for preparing estimates. It is expressly understood that the government will not be responsible for any deductions, interpretations or conclusions made from data on this drawing by any bidder or contractor.

NOTES

For record of foundation explorations, see Sheet No. 6

For locations of geologic sections, see Sheet No. 4

LEGEND FOR GEOLOGIC SECTIONS

- Sandy SILT.
- Varies from silty, gravelly SAND to clayey, sandy GRAVEL with cobbles and boulders. (TILL)
- Varies from micaceous silty SAND to silty, sandy GRAVEL with cobbles and boulders. NOTE: Material under and adjacent to stream channel relatively less impervious than similar material under the hill.
- Varies from silty SAND to sandy CLAY, generally stratified.
- Decomposed SCHIST.
- SCHIST
- o—o—o Subsurface water level at time of exploration.

REVISION	DATE	DESCRIPTION	BY

CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

CONNECTICUT RIVER FLOOD CONTROL
OTTER BROOK DAM
GEOLOGY NO. 2
OTTER BROOK, NEW HAMPSHIRE

PREPARED BY: R.C.S. HAY — CHIEF, N.E.D. LABORATORIES — SUBMITTED BY — PROJECT ENGINEER — CHIEF, PLAN & APP'TS BRANCH — APPROVED — CHIEF, ENGINEERING DIV. — LT. COL. C.E. ASST. TO DIVISION ENGINEER

DATE JUNE 1956

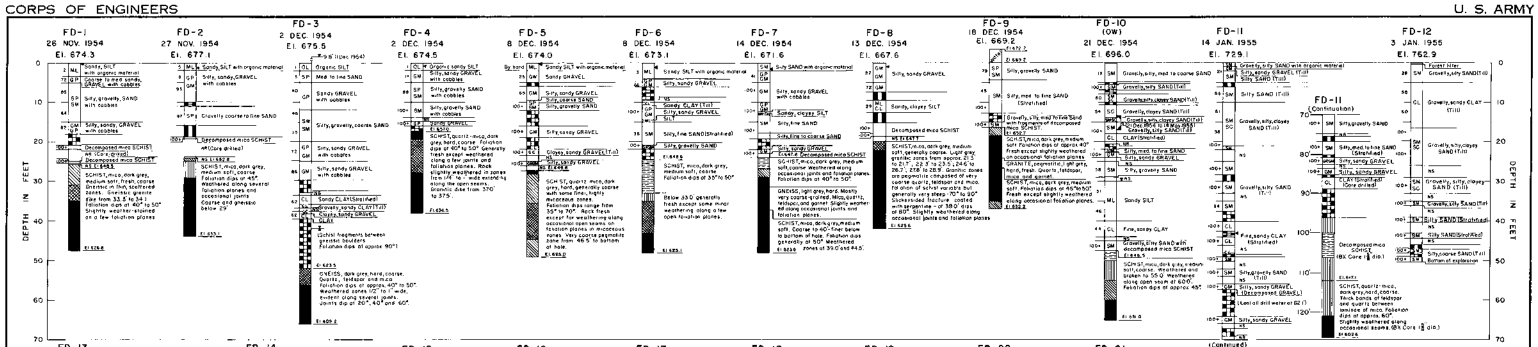
SCALES AS SHOWN

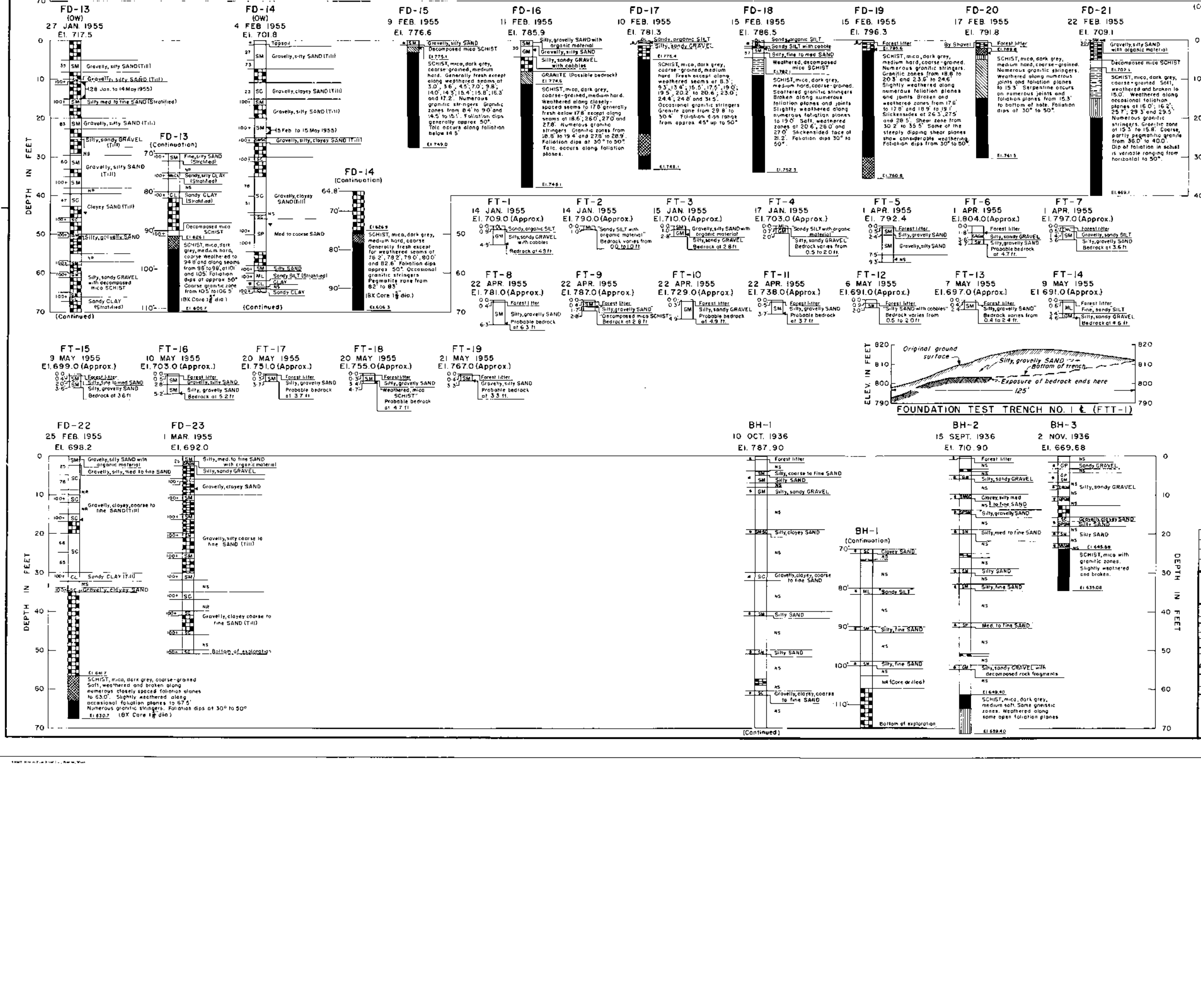
DRAWING NUMBER CT-2-1468

SHEET 5 OF 60

(5)

CORPS OF ENGINEERS — U. S. ARMY





LEGEND FOR GRAPHIC LOGS

- FD-10 — Type and number of exploration.
- (OW) — Observation well installed.
- 21 DEC 1954 — Date exploration completed.
- El. 696.0 — Elevation of ground surface, during time of exploration.
- Maximum artesian head.
- Subsurface water level in boring at time of exploration. *(See note on subsurface water.)*
- Range of subsurface water during period of observation.
- Artesian flow encountered.
- SM — Group letter symbol according to Unified Soil Classification System.
- NR — No Recovery or unsatisfactory soil samples recovered.
- Bottom of observation well.
- NS — Not Sampled (Core-drilled, blasted and / or wash-bored).
- 24 — Blows per foot of penetration considered most representative for each sample drive using a 300 pound hammer with free fall of about 18 inches on a 2½" O.D. or 2" I.D. size sample spoon equipped with bevelled and sharpened drive shoe.
- * — Blow count not recorded or not considered representative.
- Cobble or boulder (Core drilled).
- Cobbles or boulders, continuous or nested. (Core-drilled and / or blasted and chopped).
- El. 648.5 Elevation of bedrock surface.
- Rock core recovery 0 - 25 %
- Rock core recovery 25 - 50 %
- Rock core recovery 50 - 75 %
- Rock core recovery 75 - 90 %
- Rock core recovery 90 - 100 %

  (All core sizes are (NX) 2⅛" dia. except those indicated otherwise.)
- El. 631.0 Elevation at bottom of exploration.

NOTES

Elevations refer to Mean Sea Level Datum.

For locations of foundation explorations, see Sheet No. 4

Water levels recorded during subsurface explorations seldom correspond with the natural level of free ground water, except in extensive and thick deposits of sands and gravels which are sufficiently pervious to permit rapid stabilization of water levels in the exploratory hole. Absence of subsurface water level in the log of any exploration is not necessarily to be construed that ground water will not be encountered in excavation at that location.

REVISION	DATE	DESCRIPTION	BY

CORPS OF ENGINEERS, U. S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

DR. BY / TR. BY / CK. BY — PREPARED BY
K. G. Lindell — CHIEF, N.E.D. LABORATORIES
G. W. Hicks — PROJECT ENGINEER
SUBMITTED BY: [signature] — CHIEF PLANN. & RPT'S BRANCH
APPROVED: [signature] — CHIEF, ENGINEERING DIV.
APPROVED: [signature] — LT. COL. C.E., ASST. TO DIVISION ENGINEER

CONNECTICUT RIVER FLOOD CONTROL
OTTER BROOK DAM
RECORD OF FOUNDATION EXPLORATIONS

OTTER BROOK, NEW HAMPSHIRE

DATE: JUNE 1956

SCALE: AS SHOWN — SPEC. NO. CIV-ENG-19-016-57-4

DRAWING NUMBER: CT-2-1469

SHEET 6 OF 60

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DIVISION 02 - SITE CONSTRUCTION

SECTION 02950

WETLANDS MITIGATION AREA

SECTION 02950

WETLANDS MITIGATION AREA

PART 1 GENERAL

1.1 SUMMARY

1.1.1 General

a. In order to achieve complete correction of the spillway deficiency at the Otter Brook Lake Flood Control Facility, the spillway approach channel will be excavated, which will affect 0.31 acres of freshwater emergent wetland and 1.4 acres of upland located in the spillway approach channel. This Specification Section covers the on-site and in-kind replication of wetland habitat and the restoration of 1.4 acres of upland habitat. In addition, trailing arbutus (Epigaea repens), a New Hampshire Special Concern Species, shall be stored for later replanting.

b. South of the spillway weir in the spillway discharge channel, a groundwater seep originating in the eastern rock ledge, located 40 feet south of the spillway weir, provides hydrological support for bog-type wetland (moss/scrub-shrub) located in the spillway discharge channel. Impacts to the eastern rock ledge and its groundwater seep south of the spillway weir shall be avoided.

1.1.2 Habitat Areas

a. There is a 0.01-acre emergent wetland and an adjacent larger 0.30-acre emergent wetland located in the spillway approach channel at the Otter Brook Lake project. These wetlands, totaling 0.31 acres, have developed in a depression in the mid-section of the spillway approach channel north of the spillway weir. Hydrologic conditions in this depression, ponding of rainwater and poor drainage, have supported the development of hydric vegetation such as spikerush (Eleocharis sp.), arrowhead (Sagittaria latifolia) and water plantain (Alisma triviale), cattail (Typha latifolia) with interspersed rush (Juncus canadensis), smartweed (Polygonum sp.) and purple loosestrife (Lythrum salicaria), a non-native invasive species. The larger wetland also functions as amphibian breeding habitat as determined through observation by Corps of Engineers facility personnel.

b. Outside of the delineated wetland area (1.4 acres), soil and hydrological conditions in the spillway approach channel support a variety of upland vegetation adapted to mesic to dry conditions, including specimens of trailing arbutus (Epigaea repens), a New Hampshire Special Concern Species located in the spillway approach channel adjacent to the weir. Prior to the commencement of construction activities, trailing arbutus will be identified and tagged by project personnel. The tagged plants shall be containerized by the Contractor, and the stored for later replanting as directed. Less than 10 plants are expected to be located.

c. South of the spillway weir in the spillway discharge channel, a bog-type wetland (moss/scrub-shrub) has developed supported partially by a groundwater seepage originating in the eastern rock ledge, located 40 feet south of the spillway weir. A small stream meanders down gradient creating

numerous microenvironments where water is captured in depressions in the spillways' exposed bedrock. Species observed in this wetland area include sedges, sphagnum moss (Sphagnum sp.), smartweeds, rushes, large cranberry (Vaccinium macrocarpon), rose pogonia (Pogonia ophioglossoides), a New Hampshire Special Concern species, and round leaved sundew (Drosera rotundifolia). Impacts to the eastern rock ledge and its groundwater seep south of the spillway weir shall be avoided.

1.1.3 Replication and Enhancement

a. Emergent wetlands shall be replicated as shown on the drawings, on-site and in-kind (0.32 acres) through the removal and stockpiling of existing wetland soils, the creation of the topographic features similar to pre-existing conditions following the excavation of specified bedrock materials in the spillway approach channel, and the replacement of stockpiled wetland soils within the created depression. Prior to stockpiling wetland soils, purple loosestrife shall be eradicated through hand pulling and/or herbicide treatments. The spillway approach channel shall be mowed prior to removal of wetland soils. Soil shall be excavated and stockpiled on-site. Following placement of wetland soils, the area shall be seeded with a wetland seed mixture as specified.

b. Corps personnel have identified the 0.30-acre wetland located in the spillway approach channel as a vernal pool. Vernal pools are important breeding habitat to a number of amphibians and reptiles. The land immediately surrounding vernal pools generally serves all the non-breeding habitat requirements of those species that require vernal pools for breeding. Birds and mammals also utilize vernal pools as feeding sites. There shall be no construction activities (wetland or upland) from March 15 to June 15 of any year to allow the completion of the vernal pool-breeding season the year of construction. Spring seeding will be allowed within the March 15 to June 15 timeframe in the plant establishment period following construction (if seeding within this window is determined to be most beneficial).

1.1.4 Upland Restoration

The 1.4-acre upland portion of the spillway approach channel shall be mowed prior to removal of soils. Upland soils shall be excavated and stockpiled on-site for later reuse, in a separate location from wetland soil stockpiling. Following the excavation of specified bedrock materials in the spillway approach channel, stockpiled upland soils will be replaced and graded. The area will be seeded with an erosion control/restoration mix as specified.

1.2 QUALIFICATIONS

1.2.1 Wetland Restoration Specialist

Wetland restoration shall be supervised by an individual with previous experience supervising wetland restoration projects similar to or more complex than restoration work of this contract.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be

submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Work Plan; G, DO

The procedures proposed for the accomplishment of habitat creation shall be submitted for approval prior to the start of work. The proposed procedures shall provide for safe execution of the work and protection of the surrounding environment from sediment run-off. The procedures shall include a detailed description of the methods and equipment to be used and the sequence of operations. The plan shall cover excavation, dewatering, fill, disposal, hydro seeding, vegetation, containerization and storage of plants, and sedimentation and erosion control. The plan shall show the location and contours of replicated wetland.

Wetland Restoration Specialist; G, DO

The Contractor shall submit a resume summarizing the professional qualifications, including education and wetland and upland habitat restoration experience, of the proposed restoration Wetland and Upland Habitat Restoration Specialist. A brief description of wetland and upland restoration projects supervised by the person during the last three years shall be provided as an attachment. The description shall include project name, location, size, and, for at least one project, the name and phone number of a client reference.

Plant Establishment Period

The Contractor shall submit the calendar time period for the plant establishment period. When there is more than one establishment period, the boundaries of the planted areas covered for each period shall be described.

SD-07 Certificates

Fertilizer

Certificates of compliance certifying that materials meet the requirements specified, prior to the delivery of materials. Certified copies of the Manufacturer's chemical analysis and application instructions shall be included.

1.4 SHIPMENT, DELIVERY, INSPECTION, STORAGE, AND HANDLING OF MATERIALS

1.4.1 Shipping Containers

Containers shall be sufficiently rigid to protect seed from damage during shipping.

1.4.2 Identification of Plant Material

Bags or boxes containing seed shall be identified with durable waterproof, u-v stabilized labels and weather-resistant ink stating the correct seed mix.

1.4.3 Inspection

The Contracting Officer for conformity to the specifications shall inspect

seed mixtures upon arrival at the jobsite. Unacceptable materials shall be removed from the jobsite. Seed mixes shall be as specified in the work plan and drawings or comparable mixture as approved by the Contracting Officer. Mixes shall be proportioned by weight. Wet, moldy, or otherwise damaged seed shall be rejected.

1.4.4 Storage of Plant Material

Specimen(s) of trailing arbutus, containerized on-site for later planting, shall be stored in areas designated or approved by the Contracting Officer. Roots balls of container plants shall be kept moist. Plants shall be protected from exposure to wind and shall be shaded from the sun.

1.4.5 Storage of Other Materials

Wetland and upland soils shall be stored separately, in areas designated or approved by the Contracting Officer.

PART 2 PRODUCTS

2.1 SURFACE EROSION CONTROL MATERIAL

2.1.1 Straw

Straw used to conserve moisture in summer and fall seeding shall be weed free.

2.1.2 Hay Bales

Hay bales shall be approximately 36" long by 18" wide by 24" high. The hay used in the fabrication of the bales shall be clean, fresh, small grain straw.

2.2 SEED

2.2.1 General

Two types of seed mixtures will be used to revegetate the construction area; a New England Wetmix shall be used in the 0.32 acre wetland replication area and a New England Erosion Control/Restoration Mix shall be used in the 1.4 acre upland area in the spillway approach channel . Seed mixes shall be clearly marked to identify the contents of the mix with regard to species (botanical names), percent by weight of each species in the mix, and place (i.e., state) of origin of each species. Seed shall be protected during delivery to prevent wetting, water damage, or exposure to high temperatures greater than 90 degrees F. Seed shall be stored in dry locations, out of the sun and away from contaminants.

2.2.2 Wetland Seed Mixture

New England Wetmix (Source: New England Wetland Plant, Inc., 820 West Street, Amherst, MA 01002, Phone: (413) 548-8000 (or comparable mixture) shall be used to seed the 0.32-acre wetland replication area. The optimal time for seeding in the wetland replacement area is the fall up to the time of snow cover. If planted during the fall, the seed mix will germinate the following spring. During the first season growth, several species will produce seed while other species will produce seed the second growing season. If the seed is sown too early in the fall (before October 15 in moist areas), many of the seeds will germinate within 10 days, which may

lead to winterkill of new seedlings. Spring seeding will work well but germination is slightly reduced from fall seeding. It is expected that rootstock contained within the reused soil will also contribute to the revegetation process. New England Wetmix will be broadcast at a rate of 17 LBS/ACRE (2500 sq. ft./lb). A light mulch of clean weed-free straw will be provided.

2.2.3 Upland Seed Mixture

New England Erosion Control/Restoration Mix (Source: New England Wetland Plant, Inc., 820 West Street, Amherst, MA 01002, Phone: (413) 548-8000 (or comparable mixture) shall be used to seed the 1.4 acres of upland in the spillway approach channel. Seeding in the upland area shall be conducted as soon as the area is fully graded and stabilized and seeding success is assured. Best results are obtained with a spring seeding. Summer and fall seeding can be successful with a light mulching of weed free straw to conserve moisture. Late fall and winter dormant seeding require a slight increase in seeding rate. Fertilizer used for the upland area shall be commercial grade, free flowing granular fertilizer with a nitrogen phosphorus-potassium ratio: 10 10 10. New England Erosion Control/Restoration Mix will be broadcast at a rate of 35 LBS/ACRE (1245 sq.ft./lb).

2.2.4 Planting/Seeding Conditions

Planting/Seeding operations shall be performed only during periods when beneficial results can be obtained. Planting/Seeding is prohibited when the ground is frozen. When drought, excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to the planting operations, proposed times shall be submitted to and approved by the Contracting Officer.

2.2.5 Seeding Method

Prior to installing seed, any previously prepared surface shall be reworked to meet the finish grade, topsoil, and fertilizer requirements. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution. To prevent excessive runoff of fertilizer into the wetland, fertilizer shall not be spread during when the ground is frozen. The seeding method shall be broadcast seeding. Seed shall be uniformly broadcast as directed by the Contracting Officer at the time of seeding. Seed shall be raked lightly to provide proper contact with the soil.

2.2.6 Watering

Water shall be applied, when necessary, to supplement natural rainfall at a rate sufficient to ensure moist soil conditions and vigorous root growth and development (approximately 1 inch of water per week). Erosion, excessive runoff, and puddling shall be prevented during supplemental watering.

2.2.7 Sources

Seed mixtures shall be obtained from a nursery that grows material specifically for wetland restoration or construction projects. Seed materials shall be derived from stock native to the northern United States, east of Minnesota and north of 39.5 degrees north latitude. Possible sources include:

New England Wetland Plant, Inc.
820 West Street
Amherst, MA 01002,
Phone: (413) 548-8000

Ernst Conservation Seeds
9006 Mercer Pike
Meadville, PA 16335-9299
Phone: (800)-873-3321
http://www.ernstseed.com/

2.2.8 Substitutions

Requested changes to seed mixtures may be made in writing to the Contracting Officer. Substitutions will not be permitted without prior written request and approval from the Contracting Officer.

2.3 FERTILIZER

Fertilizer used for the upland area shall be commercial grade, free flowing granular fertilizer with a nitrogen phosphorus-potassium ratio: 10 10 10.

PART 3 EXECUTION

3.1 WETLAND REPLICATION AND UPLAND RESTORATION AREAS

3.1.1 General

Currently existing on-site is a small 0.01-acre emergent wetland and an adjacent larger 0.30-acre emergent wetland located in the spillway approach channel at the Otter Brook Lake project. These wetlands, totaling 0.31 acres, will removed during construction activities and will be replicated on-site and in-kind with 0.32 acres of emergent wetland. The 1.4 acres of upland in the spillway approach channel will also be restored.

The 1.4-acre upland area in the spillway approach channel consists of upland grasses and forbs adapted to mesic to dry conditions, including a specimen of trailing arbutus (Epigaea repens), a New Hampshire Special Concern Species located in the spillway approach channel adjacent to the weir. Prior to the commencement of construction activities, trailing arbutus will be identified and containerized and the stored for later replanting. Upland habitat conditions will be restored in the spillway approach channel and specimen(s) of trailing arbutus replanted following excavation.

3.1.2 Wetland Replication Area

As specified, invasive species will be identified and eliminated in the existing wetlands prior to construction activities in the spillway approach channel. The spillway will be mowed and wetland soils excavated and stockpiled. The spillway approach channel will be excavated to elevation 771.0 National Geodetic Vertical Datum (NGVD) as shown on the plans. To replace emergent wetland habitat on-site, a depression will be excavated 1 foot below grade to elevation 770.0 NGVD with a 1V:3H side slope as shown on the plans, an area 0.32 acres in size. Wetland soils stockpiled on-site will be placed in the depression and graded to a uniform depth. The area will be seeded with a wetland seed mix as specified.

3.1.3 Upland Restoration Area

Prior to the commencement of construction activities, trailing arbutus will be identified and containerized and the stored for later replanting. The spillway approach channel will be mowed and then excavated to elevation 771.0 NGVD as shown on the plans. To restore habitat conditions to 1.4 acres of upland, upland soils stockpiled on-site will be placed in the upland portion of the spillway approach channel (elevation 771.0+) and graded to a uniform depth. The area will be seeded with an erosion control/restoration mix as specified. Containerized specimen(s) of trailing arbutus will be replanted in the original location.

3.1.4 Timing of Construction

There shall be no construction activities (wetland or upland) from March 15 to June 15 of any year. Spring seeding will be allowed within the March 15 to June 15 timeframe in the plant establishment period following construction (if seeding within this window is determined to be most beneficial).

3.2 EROSION AND SEDIMENTATION CONTROL

3.2.1 General

The Contractor shall take precautions to reduce erosion and to stop sediment from leaving or entering the work limits. These precautions are subject to the approval of the Contracting Officer. Prior to the start of excavation at the site erosion control measures shall be installed along the edge of the site as shown on the drawings and specified in Section 01356 STORM WATER POLLUTION PREVENTION MEASURES. Hay bales shall be toed-in a minimum of three inches to prevent undermining. Contractor equipment and personnel shall not enter Otter Brook Lake except as necessary to perform the work of this contract.

3.2.2 Removal and Disposal

Upon completion of the mitigation area and acceptance of the work areas, the Contractor shall remove hay bails and silt fences and sedimentation control measures and dispose off-site. Erosion control matting in seeding areas shall be left in place.

3.3 INVASIVE PLANT CONTROL

Invasive plants, primarily purple loosestrife, will be removed by hand pulling and/or herbicide treatment from the wetland areas prior to excavation of wetland soils. An assessment of invasive plants shall be conducted in the spring of the initial planting year and during the specified Plant Establishment Period to determine the extent of any invasive plants within the 0.32 wetland area, primarily purple loosestrife. If invasive plants are identified within the wetland replacement area, physical methods (hand pulling) will be implemented by the Contractor to rid the infestation.

3.4 PLANT ESTABLISHMENT PERIOD

3.4.1 General

The plant establishment period shall commence immediately after planting and shall be in effect for 12 months following planting. If the planting

operation extends over more than one season, or there is a variance to the planting times, plant establishment periods shall be established for the work completed, as directed. When there is more than one plant establishment period, the contractor shall provide a plan showing the boundaries of the planted area covered for each period. If performance standards are not met during the plant establishment period, the Government will extend the period as required until the standards are met.

3.4.2 Performance Standards

3.4.2.1 General

The following performance standards must be met at the end of vegetation establishment period unless otherwise directed by the Contracting Officer.

3.4.2.2 Seeding

Seeded areas shall have an average 75% percent vegetative cover and contain no bare areas with less than 25% cover larger than 900 square ft.

3.5 CLEAN UP

Excess and waste material, and other unused items, shall be removed from the mitigation site and material storage areas and shall be disposed or recycled off site.

-- End of Section --

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DIVISION 03 - CONCRETE

SECTION 03100

STRUCTURAL CONCRETE FORMWORK

-- End of Section Table of Contents --

SECTION 03100

STRUCTURAL CONCRETE FORMWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 347R	(2001) Guide to Formwork for Concrete

DEPARTMENT OF COMMERCE (DOC)

DOC PS 1	(1996) Voluntary Product Standard - Construction and Industrial Plywood

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Formwork; G, DO

Drawings showing details of formwork, including dimensions of joints, supports, shoring, and sequence of form and shoring removal.

SD-03 Product Data

Design; G, DO

Design analysis and calculations for form design and methodology used in the design.

Form Materials

Manufacturer's data including literature describing form materials, accessories, and form releasing agents.

Form Releasing Agents

Manufacturer's recommendation on method and rate of application of form releasing agents.

1.3 DESIGN

Formwork shall be designed in accordance with methodology of ACI 347R for anticipated loads, lateral pressures, and stresses. Forms shall be capable of producing a surface which meets the requirements of the class of finish specified in Section 03307 CONCRETE FOR MNOR STRUCTURES. Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

PART 2 PRODUCTS

2.1 FORM MATERIALS

2.1.1 Forms For Class B Finish

Forms for Class B finished surfaces shall be plywood panels conforming to DOC PS 1, Grade B-B concrete form panels, Class I or II. Other form materials or liners may be used provided the smoothness and appearance of concrete produced will be equivalent to that produced by the plywood concrete form panels.

2.1.2 Forms For Class D Finish

Forms for Class D finished surfaces, except where concrete is placed against earth, shall be wood or steel or other approved concrete form material.

2.1.3 Form Ties

Form ties shall be factory-fabricated metal ties, shall be internal disconnecting type, and shall be of a design that will not permit form deflection and will not spall concrete upon removal. Solid backing shall be provided for each tie. Ties shall not leave holes in the concrete surface less than 1/4 inch nor more than 1 inch deep and not more than 1 inch in diameter, and shall leave no metal closer than 2" from the finished surface.

2.1.4 Form Releasing Agents

Form releasing agents shall be commercial formulations that will not bond with, stain or adversely affect concrete surfaces. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Formwork

Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements specified in Section 03307 CONCRETE FOR MNOR STRUCTURES and conforming to construction tolerance given in TABLE 1. Where concrete surfaces are to have a Class B

finish, joints in form panels shall be arranged as approved. Where forms for continuous surfaces are placed in successive units, the forms shall fit over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be reused if there is any evidence of surface wear and tear or defects which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse.

3.2 CHAMFERING

Except as otherwise shown, external corners that will be exposed shall be chamfered, beveled, or rounded by moldings placed in the forms.

3.3 COATING

Forms for Class B finished surfaces shall be coated with a form releasing agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions. Forms for Class D finished surfaces may be wet with water in lieu of coating immediately before placing concrete, except that in cold weather with probable freezing temperatures, coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.4 REMOVAL OF FORMS

Forms shall be removed preventing injury to the concrete and ensuring the complete safety of the structure. Formwork for walls and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement.

TABLE 1

TOLERANCES FOR FORMED SURFACES

1. Variations from the plumb:	In any 10 feet of length 1/4 inch
a. In the lines and surfaces of piers, walls and in arises	Maximum for entire length 1 inch
b. For exposed control-joint grooves, and other conspicuous lines	Maximum for entire length 1/2 inch
c. In the lines and surfaces of Fusegate bucket walls	In any 10 feet of length 1/4 inch maximum of entire length 1 inch
d. For exposed corner and other conspicuous lines of the Fusegate buckets	In any 20 feet of length 1/4 inch Maximum for entire length 1/2 inch
e. For surfaces supporting	Maximum for entire length 1/4 inch

TABLE 1

TOLERANCES FOR FORMED SURFACES

the watertightness system	Maximum abrupt irregularity 1/32 inch
2. Variation from the level or from the grades indicated on the drawings:	
a. In exposed horizontal lines, surfaces, horizontal grooves, and other conspicuous lines	In any bay or in any 20 feet of length 1/4 inch Maximum for entire length 1/2 inch
b. Centerlines of top of Fusegate bucket wall	In any 20 feet of length 1/4 inch Maximum for entire length 1/2 inch
3. Variation of the linear construction lines from established position in plan	In any 20 feet --------- 1/2 inch Maximum ----------1 inch
a. Fusegate footprint:	In any 10 feet of length 1/4 inch Maximum for entire length 1/2 inch
b. offset between Fusegates at upstream face	Maximum 1/4 inch
b. all other lines	In any 20 feet of length 1/2 inch Maximum for entre length 1 inch
4. Variation of distance between surfaces	1/4 inch per 10 feet of distance, but not more than 1/2 inch in any one bay,and not more than 1 inch total variation
a. between Fusegate walls and between Fusegate walls and wingwalls	Maximum ----------1/8 inch
b. other walls, columns, partitions	In any 10 feet of length -1/4 inch Maximum in any one bay ---1/2 inch
5. Variation in the sizes and locations of sleeves, slab openings, and wall openings	Minus ---------- 1/4 inch Plus ---------- 1/2 inch
a. centerlines of embedments in Fusegates	Maximum of 1/8 inch
b. position of voids for grouted anchors for Fusegate watertightness system	Minus ---------- 1/8 inch Plus ---------- 1/8 inch

TABLE 1

TOLERANCES FOR FORMED SURFACES

	c. all others	Minus ---------- 1/4 inch Plus ---------- 1/2 inch
6.	Variation in cross-sectional dimensions; thickness of slabs and walls	Minus ---------- 1/4 inch Plus ---------- 1/2 inch
7.	Footings:	
	a. Variation of dimensions in plan	Minus ---------- 1/2 inch Plus ---------- 2 inches when formed or plus 3 inches when placed against unformed excavation

-- End of Section --

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DIVISION 03 - CONCRETE

SECTION 03152

FUSEGATE WATER TIGHTNESS SYSTEM

-- End of Section Table of Contents --

SECTION 03152

FUSEGATE WATER TIGHTNESS SYSTEM

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 276	(2004) Standard Specification for Stainless Steel Bars and Shapes
ASTM D 297	(1993; R 1998) Rubber Products - Chemical Analysis
ASTM D 412	(1998a) Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension
ASTM D 624	(1998) Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
ASTM D 1149	(1991; R 1997) Rubber Deterioration - Surface Ozone Cracking in a Chamber
ASTM D 2240	(1997) Rubber Property - Durometer Hardness

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings; G, DO

Rubber Seal;; G, DO

Shop drawings and fabrication drawings provided by the manufacturer or prepared by the Contractor.

SD-03 Product Data

Washers

Bolts and Nuts

Epoxy-Resin Grout

Rubber Seal;

Manufacturer's literature, including safety data sheets. Manufacturer's recommended instructions for installing and for splicing rubber seals.

SD-04 Samples

Rubber Seal; G, DO

Specimens identified to indicate manufacturer, type of material, size, quantity of material, and shipment or lot represented. Each sample shall be a piece not less than 12 inch long. One splice sample of each size and type for every 50 splices made in the factory and every 10 splices made at the job site. The splice samples shall be made using straight run pieces with the splice located at the mid-length of the sample and finished as required for the installed water tightness seals. The total length of each splice shall be not less than 12 inches long.

SD-07 Certificates

Rubber Seal; G, DO

Certificates of compliance stating that the materials conform to the requirements specified.

1.3 DELIVERY AND STORAGE

Material delivered and placed in storage shall be stored off the ground and protected from moisture, dirt, and other contaminants.

PART 2 PRODUCTS

2.1 SEALS

Intersection and change of direction water tightness seals shall be shop fabricated.

2.1.1 Materials`

Non-metallic water tightness seals shall be manufactured from a prime virgin resin; reclaimed material is not acceptable. The compound shall contain plasticizers, stabilizers, and other additives to meet specified requirements.

2.1.1.1 Rubber Seal

Water tightness seals shall be manufactured from virgin material; reclaimed material is not acceptable. The seals shall be manufactured from EPDM or Neoprene with the following properties:

a. Shore Hardness, ASTM D 2240: 55 to 65

b. Tensile Strength, ASTM D 412: 2250 psi minimum

c. Thickness Tolerance, ASTM D 412: Plus or minus 2%

d. Specific Gravity, ASTM D 297: 1.20, plus or minus 0.05

e. Tensile Strength at 300% Elongation ASTM D 412: 600 psi minimum

f. Elongation, ASTM D 412: 300% minimum

g. Tear Resistance, Die C, ASTM D 624: 180 pound force per inch minimum

h. Ozone Resistance, ASTM D 1149: No cracks, 7 days, - 50 pphm - 100 degrees F, 20% elongation

2.2 ANCHOR BOLTS

Anchors Washers, Bolts and Nuts for seal system shall be stainless steel Type 304 conforming to ASTM A 276. Epoxy-Resin Grout adhesive system shall be a proprietary system produced by a manufacturer of epoxy anchor systems, equivalent to strengths obtained with Simpson Epoxy-Tie Adhesive system, by Simpson Strong-Tie Anchor Systems, Columbus Ohio, or Hilti HSE 2421 Epoxy Adhesive Anchors, by Hilti North America.

PART 3 EXECUTION

3.1 JOINTS

Joints shall be installed at locations indicated and as authorized.

3.1.1 Fusegate Base

The joint between the supporting slab and the Fusegate base shall be coated with a material to prevent bond between the slab and the Fusegate base.

3.2 SEALS, INSTALLATION AND SPLICES

Seals shall be installed at the locations shown to form a continuous water-tight diaphragm. Adequate provision shall be made to support and completely protect the seals during the progress of the work. Any seal punctured or damaged shall be repaired or replaced. Splices shall be made by certified trained personnel using approved equipment and procedures.

3.2.1 Seal

Fittings shall be shop made using a machine specifically designed to mechanically weld the seal. A miter guide, proper fixturing (profile dependant), and portable power saw shall be used to miter cut the ends to be joined to ensure good alignment and contact between joined surfaces. The splicing of straight lengths shall be done by squaring the ends to be joined.

3.2.1.1 Rubber Seal

Splices shall be vulcanized or shall be made using cold bond adhesive as recommended by the manufacturer.

3.2.1.2 Quality Assurance

Seal splicing defects which are unacceptable include, but are not limited to the following: 1) Tensile strength less than 80 percent of parent section. 2) Free lap joints. 3) Misalignment greater than 1/16 inch. 4) Misalignment which reduces seal cross section more than 15 percent. 5) Bond failure at joint deeper than 1/16 inch or 15 percent of material thickness. 6) Misalignment of seal splice resulting in misalignment of seal in excess of 1/2 inch in 10 feet. 7) Visible porosity in the weld area, including pin holes. 8) Charred or burnt material. 9) Bubbles or inadequate bonding. 10) Visible signs of splice separation when cooled splice is bent by hand at a sharp angle.

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DIVISION 03 - CONCRETE

SECTION 03200

CONCRETE REINFORCEMENT

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SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 318/318R	(2002) Building Code Requirements for Structural Concrete and Commentary

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 184/A 184M	(2001) Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A 775/A 775M	(1998) Epoxy-Coated Reinforcement Steel Bars

AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	(1998) Structural Welding Code - Reinforcing Steel

CONCRETE REINFORCING STEEL INSTITUTE (CRSI)

CRSI MSP-1	(2001) Manual of Standard Practice

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop DrawingsG, DO

Reinforcement; G, DO

Detail drawings showing reinforcing steel placement, schedules, sizes, grades, and splicing and bending details. Drawings shall show support details including types, sizes and spacing.

SD-03 Product Data

Welding;

A list of qualified welders names.

SD-07 Certificates

Reinforcing Steel; G, DO

Certified copies of mill reports attesting that the reinforcing steel furnished contains no less than 25 percent recycled scrap steel and meets the requirements specified herein, prior to the installation of reinforcing steel.

1.3 WELDING

Welders shall be qualified in accordance with AWS D1.4. Qualification test shall be performed at the worksite and the Contractor shall notify the Contracting Officer 24 hours prior to conducting tests. Special welding procedures and welders qualified by others may be accepted as permitted by AWS D1.4.

1.4 DELIVERY AND STORAGE

Reinforcement and accessories shall be stored off the ground on platforms, skids, or other supports.

PART 2 PRODUCTS

2.1 DOWELS

Dowels shall conform to ASTM A 775/A 775M, Grade 60.

2.2 FABRICATED BAR MATS

Fabricated bar mats shall conform to ASTM A 184/A 184M.

2.3 REINFORCING STEEL

Reinforcing steel shall be deformed bars conforming to ASTM A 775/A 775M, grade 60.

2.4 WIRE TIES

Wire ties shall be 16 gauge or heavier black annealed steel wire.

2.5 SUPPORTS

Bar supports for formed surfaces shall be designed and fabricated in accordance with CRSI MSP-1 and shall be galvanized, plastic coated steel or precast concrete blocks. Precast concrete blocks shall have wire ties and shall be not less than 4 inches square when supporting reinforcement on ground. Precast concrete block shall have compressive strength equal to that of the surrounding concrete. Where concrete formed surfaces will be exposed to weather or where surfaces are to be painted, steel supports within 1/2 inch of concrete surface shall be galvanized, plastic protected or of stainless steel. Concrete supports used in concrete exposed to view shall have the same color and texture as the finish surface. For slabs on

grade, supports shall be precast concrete blocks, plastic coated steel fabricated with bearing plates, or specifically designed wire-fabric supports fabricated of plastic.

PART 3 EXECUTION

3.1 REINFORCEMENT

Reinforcement shall be fabricated to shapes and dimensions shown and shall conform to the requirements of ACI 318/318R. Reinforcement shall be cold bent unless otherwise authorized. Bending may be accomplished in the field or at the mill. Bars shall not be bent after embedment in concrete. Safety caps shall be placed on all exposed ends of vertical concrete reinforcement bars that pose a danger to life safety. Wire tie ends shall face away from the forms.

3.1.1 Placement

Reinforcement shall be free from loose rust and scale, dirt, oil, or other deleterious coating that could reduce bond with the concrete. Reinforcement shall be placed in accordance with ACI 318/318R at locations shown plus or minus one bar diameter. Reinforcement shall not be continuous through expansion joints and shall be as indicated through construction or contraction joints. Concrete coverage shall be as indicated or as required by ACI 318/318R. If bars are moved more than one bar diameter to avoid interference with other reinforcement, conduits or embedded items, the resulting arrangement of bars, including additional bars required to meet structural requirements, shall be approved before concrete is placed.

3.1.2 Splicing

Splices of reinforcement shall conform to ACI 318/318R and shall be made only as required or indicated. Splicing shall be by lapping. Lapped bars shall be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than one-fifth the required length of lap or 6 inches.

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DIVISION 03 - CONCRETE

SECTION 03307

CONCRETE FOR MINOR STRUCTURES

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SECTION 03307

CONCRETE FOR MINOR STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ACI INTERNATIONAL (ACI)

ACI 117	(1990) Standard Tolerances for Concrete Construction and Materials & Commentary
ACI 308R	(2001) Guide to Curing Concrete
ACI 318/318R	(2002) Building Code Requirements for Structural Concrete and Commentary
ACI 347	(2001) Guide to Formwork for Concrete

ASTM INTERNATIONAL (ASTM)

ASTM C 143/C 143M	(2003) Slump of Hydraulic Cement Concrete
ASTM C 150	(2002ae1) Portland Cement
ASTM C 171	(2003) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 231	(2003) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2001) Air-Entraining Admixtures for Concrete
ASTM C 309	(2003) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 31/C 31M	(2003a) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(2003) Concrete Aggregates
ASTM C 39/C 39M	(2003) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 494/C 494M	(1999ae1) Chemical Admixtures for Concrete
ASTM C 618	(2003) Coal Fly Ash and Raw or Calcined

	Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 685	(2000) Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C 94/C 94M	(2003a) Ready-Mixed Concrete
ASTM D 75	(2003) Sampling Aggregates
ASTM D 98	(1998) Calcium Chloride

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data; G, DO

Air-Entraining Admixture
Accelerating Admixture
Water-Reducing or Retarding Admixture
Curing Materials

Manufacturer's literature is available from suppliers which demonstrates compliance with applicable specifications for the above materials.

Batching and Mixing Equipment; G, DO

Batching and mixing equipment will be accepted on the basis of manufacturer's data which demonstrates compliance with the applicable specifications.

Conveying and Placing Concrete; G, DO

The methods and equipment for transporting, handling, depositing, and consolidating the concrete shall be submitted prior to the first concrete placement.

Formwork design shall be submitted prior to the first concrete placement.

SD-06 Test Reports

Aggregates; G, DO

Aggregates will be accepted on the basis of certificates of compliance and test reports that show the material(s) meets the quality and grading requirements of the specifications under which it is furnished.

Concrete Mixture Proportions; G, DO

Ten days prior to placement of concrete, the contractor shall submit the mixture proportions that will produce concrete of the quality required. Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

SD-07 Certificates

Cementitious Materials

Certificates of compliance attesting that the concrete materials meet the requirements of the specifications shall be submitted in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE". Cementitious material will be accepted on the basis of a manufacturer's certificate of compliance, accompanied by mill test reports that the material(s) meet the requirements of the specification under which it is furnished.

Aggregates

Aggregates will be accepted on the basis of certificates of compliance and tests reports that show the material(s) meet the quality and grading requirements of the specifications under which it is furnished.

1.3 DESIGN AND PERFORMANCE REQUIREMENTS

The Government will maintain the option to sample and test aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary to assist the Government in procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143/C 143M and ASTM C 231, respectively, when cylinders are molded. Compression test specimens will be made, cured, and transported in accordance with ASTM C 31/C 31M. Compression test specimens will be tested in accordance with ASTM C 39/C 39M. Samples for strength tests will be taken not less than once each shift in which concrete is produced . A minimum of three specimens will be made from each sample; two will be tested at 28 days (90 days if pozzolan is used) for acceptance, and one will be tested at 7 days for information.

1.3.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'c, and no individual acceptance test result falls below f'c by more than 500 psi.

1.3.2 Construction Tolerances

A Class "B" finish shall apply to all surfaces except those specified to receive a Class "D" finish. A Class "D" finish shall apply to all surfaces

which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 347.

1.3.3 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor. Mixture proportions shall include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength f'c shall be 4,000 psi at 28 days. The maximum nominal size coarse aggregate shall be 1 inch, in accordance with ACI 318/318R. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 5 inches. The maximum water cement ratio shall be 0.45.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Concrete Reinforcement

Reinforcement shall be as specified in Section 03200 CONCRETE REINFORCEMENT.

2.1.2 Cementitious Materials

Cementitious materials shall conform to the appropriate specifications listed:

2.1.2.1 Portland Cement

ASTM C 150, Type I or II.

2.1.2.2 Pozzolan

Pozzolan if used shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

2.1.3 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33 Class Designations 4M or better.

2.1.4 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

2.1.4.1 Air-Entraining Admixture

Air-entraining admixture shall meet the requirements of ASTM C 260.

2.1.4.2 Accelerating Admixture

Calcium chloride shall meet the requirements of ASTM D 98. Other accelerators shall meet the requirements of ASTM C 494/C 494M, Type C or E.

2.1.4.3 Water-Reducing or Retarding Admixture

Water-reducing or retarding admixture shall meet the requirements of ASTM C 494/C 494M, Type A, B, or D. High-range water reducing admixture Type F may be used only when approved, approval being contingent upon particular placement requirements as described in the Contractor's Quality Control Plan.

2.1.5 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.6 Curing Materials

Curing materials shall conform to the following requirements.

2.1.6.1 Impervious Sheet Materials

Impervious sheet materials, ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

2.1.6.2 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 General

Construction joints shall be prepared to expose coarse aggregate, and the surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the Government prior to placing.

3.1.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed the metal part of the tie will be not less than 2 inches from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matters such as loose coatings or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

3.1.3 Formwork Installation

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth and free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

3.1.4 Production of Concrete

3.1.4.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94/C 94M except as otherwise specified.

3.1.4.2 Batching and Mixing Equipment

The contractor shall have the option of using an on-site batching and mixing facility. The facility shall provide sufficient batching and mixing equipment capacity to prevent cold joints. The method of measuring materials, batching operation, and mixer shall be submitted for review. On-site plant shall conform to the requirements of either ASTM C 94/C 94M or ASTM C 685.

3.2 CONVEYING AND PLACING CONCRETE

Conveying and placing concrete shall conform to the following requirements.

3.2.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval. When concrete is mixed and/or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours or 45 minutes when the placing temperature is 85 degrees F or greater unless a retarding admixture is used. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

3.2.2 Consolidation

Each layer of concrete shall be consolidated by rodding, spading, or internal vibrating equipment. External vibrating equipment may be used when authorized. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

3.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the contractor.

3.2.4 Hot-Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308R, is expected to exceed 0.2 pound per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

3.3 FORM REMOVAL

Forms shall not be removed before the expiration of 24 hours after concrete placement except where otherwise specifically authorized. Supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

3.4 FINISHING FORMED SURFACES

Forms, form materials, and form construction are specified in Section 03100 STRUCTURAL CONCRETE FORMWORK. Finishing of formed surfaces shall be as specified herein. Unless another type of architectural or special finish is specified, surfaces shall be left with the texture imparted by the forms except that defective surfaces shall be repaired. The uniform color of the concrete shall be maintained by use of only one mixture without changes in materials or proportions for any structure or portion of structure that requires a B finish. Except for major defects, as defined hereinafter, surface defects shall be repaired as specified herein within 24 hours after forms are removed. Repairs of the so-called "plaster-type" will not be permitted in any location. Tolerances of formed surfaces shall conform to the requirements of ACI 117. These tolerances apply to the finished concrete surface, not to the forms themselves; forms shall be set true to line and grade. Form tie holes requiring repair and other defects whose depth is at least as great as their surface diameter shall be repaired as specified in paragraph Damp-Pack Mortar Repair. Defects whose surface diameter is greater than their depth shall be repaired as specified in paragraph Repair of Major Defects. Repairs shall be finished flush with adjacent surfaces and with the same surface texture. The cement used for all repairs shall be a blend of job cement with white cement proportioned so that the final color after curing and aging will be the same as the adjacent concrete. Concrete with excessive honeycomb, or other defects which affect the strength of the member, will be rejected. Repairs shall be demonstrated to be acceptable and free from cracks or loose or drummy areas at the completion of the contract and, for Class A and B Finishes, shall be inconspicuous. Repairs not meeting these requirements will be rejected and shall be replaced.

3.4.1 Class B Finish

Class B finish is required where indicated on the drawings. Fins, ravelings, and loose material shall be removed, all surface defects over 1/2 inch in diameter or more than 1/2 inch deep, shall be repaired and, except as otherwise indicated or as specified in Section 03100 STRUCTURAL CONCRETE FORMWORK, holes left by removal of form ties shall be reamed and filled. Defects more than 1/2 inch in diameter shall be cut back to sound concrete, but in all cases at least 1 inch deep.

3.5 FINISHING

3.5.1 General
****
No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

3.5.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

3.5.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch for a float finish as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water or cement shall be added to the surface during finishing.

3.5.3.1 Float Finish

Surfaces to be float finished shall be screeded and darbied or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

3.6 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

a. Continuous sprinkling or ponding.

b. Application of absorptive mats or fabrics kept continuously wet.

c. Application of sand kept continuously wet.

d. Application of impervious sheet material conforming to ASTM C 171.

e. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days . If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

3.7 TESTS AND INSPECTIONS

3.7.1 General

The individuals who sample and test concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

3.7.2 Inspection Details and Frequency of Testing

3.7.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor to certify that it is ready to receive concrete.

3.7.2.2 Air Content

Air content shall be checked at least twice during each shift that concrete is placed . Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

3.7.2.3 Slump

Slump shall be checked twice during each shift that concrete is produced . Samples shall be obtained in accordance with ASTM C 172 and tested in

accordance with ASTM C 143/C 143M.

3.7.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

3.7.3 Action Required

3.7.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available. Placing shall not be continued if any pile is inadequately consolidated.

3.7.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

3.7.3.3 Slump

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

3.7.4 Reports

The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered within 3 days after the end of each weekly reporting period.

-- End of Section --

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SECTION 03451

FUSEGATE PLANT-PRECAST CONCRETE

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SECTION 03451

FUSEGATE PLANT-PRECAST CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ACI INTERNATIONAL (ACI)

ACI 211.1	(1991) Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 214R	(2002) Evaluation of Strength Test Results of Concrete
ACI 301	(1999) Specifications for Structural Concrete for Buildings
ACI 304R	(2000) Guide for Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	(1999) Hot Weather Concreting
ACI 306.1	(1990) Standard Specification for Cold Weather Concreting
ACI 318	(2002) Building Code Requirements for Structural Concrete

ASTM INTERNATIONAL (ASTM)

ASTM A 167	(1999) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
ASTM A 615/A 615M	(2003a) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 143	(1998) Slump of Hydraulic Cement Concrete
ASTM C 150	(2002ae1) Portland Cement
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 260	(2001) Air-Entraining Admixtures for Concrete
ASTM C 31/C 31M	(2003a) Making and Curing Concrete Test Specimens in the Field

ASTM C 33	(2003) Concrete Aggregates
ASTM C 39	(1993a) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 494	(1992) Chemical Admixtures for Concrete
ASTM C 618	(2003) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 94	(1994) Ready-Mixed Concrete

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)

PCI MNL-116	(1999) Quality Control for Plants and Production of Structural Precast Concrete Products

1.2 SYSTEM DESCRIPTION

The fusegate modules are designed to be cast-in-place on site, or they may be precast at an off-site location, at the Contractor's Option. As such the provisions of both Section 03307 and this section may apply. The provisions of Section 03307 apply to precast work unless specifically stated otherwise in this section.

If the precast option is chosen by the Contractor, then he must make provisions for tight dimensional tolerances for flatness of the base surface of the spillway sill, and must arrange for moving and lifting the modules into position. Dealing with the lifting and transportation issues will be the responsibility of the Contractor, subject to review by the Contracting Officer.

If the precast option is selected there will be nodifications required to the fusegate construction, that will be the responsibility of the Contractor. It is anticipated that the base slab will be constructed in one layer rather than the combination of cast-in-place and precast lifts.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Cast-in embedded items, lifting devices, and connectors; G, DO

SD-05 Design Data

Precast concrete transportation design calculations; G, DO

Contractor-furnished mix design; G, DO

Concrete mix design for repair of surface defects; G, DO

Precast lifting devices, design calculations; G, DO

SD-06 Test Reports

Strength tests; G, DO

Submit commercial testing results in accordance with PCI MNL-116 and as required in paragraph entitled "Sampling and Testing."

SD-11 Closeout Submittals

Concrete batch ticket information; G, DO

1.4 MODIFICATION OF REFERENCES

In the referenced ACI and PCI publications, consider the advisory provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may," wherever they appear. Interpret reference to the "Building Official," the "Structural Engineer," and the "Architect/Engineer" to mean the Contracting Officer.

1.5 PLANT INSPECTION

Precast units shall be inspected by the QC representative prior to being transported to the job site. The Contractor shall give notice 14 days prior to the time the units will be available for plant inspection. Neither the exercise nor waiver of inspection at the plant will affect the Government's right to enforce contractual provisions after units are transported or erected.

1.5.1 PCI Quality Certifications

1.5.1.1 Product Quality Control

PCI MNL-116 for PCI enrolled plants. Where fusegate modules are manufactured by specialist in plants not currently enrolled in the PCI "Quality Control Program," provide a product quality control system in accordance with PCI MNL-116 and perform concrete and aggregate quality control testing using an approved, independent commercial testing laboratory. Submit test results to the Contracting Officer.

1.6 QUALITY ASSURANCE

1.7.1 Transportation and Lifting Device Design Calculations

Submit design calculations prepared and sealed by a professional engineer demonstrating the proposed lifting and transportation scheme is adequate and will not cause damage to the modules. Submit full information on any Cast-in embedded items, lifting devices, and connectors

1.7.2 Mix Designs

Sixty days minimum prior to concrete placement, submit a mix design for each strength and type of concrete. Include a complete list of materials including type; brand; source and amount of cement, fly ash, pozzolan, ground slag, and admixtures; and applicable reference specifications.

1.7.3 Required Records

ASTM C 94. Submit mandatory batch ticket information for each load of ready-mixed concrete.

PART 2 PRODUCTS

2.1 CONCRETE

2.1.1 Contractor-Furnished Mix Design

ACI 211.1 and ACI 301. Concrete shall have a 28-day compressive strength, slump, and air content as specified in Section 03307 CONCRETE FOR MINOR STRUCTURES. The mix design shall be preparde and submitted in accordance with ACI 318.

2.2 MATERIALS

2.2.1 Fine Aggregates

ASTM C 33 As specified in Section 03307

2.2.2 Coarse Aggregate

ASTM C 33 As specified in Section 03307

2.2.3 Cement

ASTM C 150, Type I or II As specified in Section 03307

2.2.4 Fly Ash and Pozzolan

ASTM C 618, Type N, F, or C, except that the maximum allowable loss on ignition shall be 6 percent for Type N and F. Add with cement. As specified in Section 03307

2.2.5 Admixtures

ASTM C 260 for air-entraining admixtures. Other admixtures: ASTM C 494. Certify that admixtures are free of chlorides. As specified in Section 03307

2.2.6 Reinforcement

2.2.6.1 Reinforcing Bars

As specified in Section 03200

2.2.6.2 Supports for Concrete Reinforcement

Include bolsters, chairs, spacers, and other devices necessary for proper spacing, supporting, and fastening in place.

a. Supports: ASTM A 615/A 615M, wire-type reinforcing bars and welded wire fabric.

b. Legs of supports in contact with formwork: Stainless steel, ASTM A 167, Type 302 or Type 304.

2.3 Form Materials

Provide forms and form-facing materials of wood, metal, plastic, or other approved material to produce concrete having the specified finish. Construct forms mortar-tight and of sufficient strength to withstand all pressures due to concrete placing operations and temperature changes within the specified fabrication tolerances.

2.4 FABRICATION

2.3 Formwork and Fabrication Tolerances

Provide metal or wood forms. Brace and stiffen against deformation. Provide dimensional tolerances as follows:

Overall panel dimensions:

10 feet or less	Plus 1/8 inch, minus zero
10 to 20 feet	Plus or minus 1/8 inch
20 feet or more	Plus of minus 3 1/6 inch

Thickness: Plus 1/4 inch, minus 1/8 inch

Angular deviation of sides:
Plus or minus one percent, 1/16 inch maximum

Deviation from square (difference in length of two diagonals):
Not to exceed 0.1 percent, 1/4 inch maximum

Deviation from flatness of bottom bearing surface: (deviation from flat plane):Not to exceed 1/8 inch maximum

Size and location of openings within one unit:
Plus or minus 1/4 inch

Local smoothness (deviation from a true plane):
Plus or minus 0.2 percent

Bowing (convex or concave):
Length of bow/480 (0.2 percent), with a maximum of 5/8 inch

Position of reinforcement: Within 1/4 inch of indicated position

Position of anchorage devices: Plus or minus 1/2 inch

Position of pick-up devices: Plus or minus 3 inches

2.4 Reinforcement

ACI 301. Place reinforcing bars and welded wire fabric. Secure in position with tie wires, bar supports, and spacers.

2.5 Preparation for Placing Concrete

Remove hardened concrete, excess form parting compound, standing water, ice, snow, or other deleterious substances from form interiors and reinforcement before concrete placement. Secure reinforcement and embedded items.

2.6 Concrete Mixing and Conveying

2.6.1 Batch Plant, Mixer, Mixing, and Measuring of Materials

ASTM C 94.

2.6.2 Conveying

Prevent segregation and loss of materials.

2.7 Concrete Placing

ACI 304R. Deposit concrete in the forms continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause formation of seams or planes of weakness within the precast sections. Place concrete at a constant temperature of between 50 and 90 degrees F. Make temperature of forms or molds the same as or close to the concrete temperature. For hot or cold weather, use methods recommended by ACI 305R and ACI 306.1. Vibrate and consolidate concrete to prevent segregation and to produce a high-density concrete free of honeycomb and rock pockets.

2.8 Finishing

2.8.1 Unformed Surfaces

The top surface of the precast slabs shown on the drawings for the fusegates should be struck off, roughened as- cast and cleaned of laitance before placing the next lift.

For other concealed surfaces, provide a trowel finish (Standard Smooth Finish). Level surface with a straightedge, and strike off. After surface water has disappeared, float and trowel surface. Provide smooth finished surface, free of trowel marks, and uniform in texture and appearance.

2.8.2 Smooth, Exposed-to-View Surfaces

Provide a standard smooth finish to all exposed-to-view surfaces of fusegate modules, unless otherwise indicated. Provide a concrete surface having the texture imparted by a steel form or other approved smooth surfaces form-facing material.

2.9 Curing

Provide moist or steam curing or curing compound. Do not remove unit from forms; prevent moisture loss and maintain 50 degrees F minimum for at least 24 hours after finishing. Maintain fusegate modules in a surface damp condition at 50 degree F minimum until concrete has attained 75 percent minimum of the design compressive strength.

2.10 Repair of Surface Defects

Cut out defective areas to solid concrete, with edges of cuts perpendicular to the surface of the concrete, and clean thoroughly. Dampen area to be patched and brush-coat with nonshrink grout or bonding agent. Patch the surface in accordance with procedures previously submitted by the Contractor and approved by the Contracting Officer. Where exposed to view, the patches, when dry, shall be indistinguishable from the surrounding surfaces.

2.10.1 Smooth, Concealed Surfaces

Acceptable defective area shall be limited to holes left by rods and other temporary inserts, and to honeycomb or rock pockets of 1/4 inch diameter maximum. Remove fins and other projections on the surfaces.

2.10.2 Exposed-to-View Surfaces

The combined area of acceptable defective areas shall not exceed 0.2 percent of the exposed-to-view surface area and shall be limited to holes of 1/4 inch diameter maximum.

PART 3 EXECUTION

3.1 INSTALLATION

Verify that all parts of the supporting structure are complete and ready to receive the Fusegate modules and that site conditions are conducive to proper installation. The Fusegates shall be lifted into its exact location, and shall not be rolled or rigged into place for final adjustment via the jacking shoes. The Contractor shall submit the proposed methods for handling and installation of the Fusegate modules for review and approval. The methods for handling and installation of the Fusegate modules shall conform to the related drawings.

3.1.1 Transporting fusegate modules

Fusegate modules shall attain the specified 28-day compressive design strength prior to transportation. The Contractor shall ensure safe handling, loading and transportation of the Fusegate modules to the dam site. After final acceptance, the Fusegates shall be prepared for shipping by providing suitable bracing and supports to prevent distortion and damage during shipping, and adequate covering to protect surfaces and corners.

3.1.2 Erection Tolerances

Locate fusegate modules to accommodate proper joint width, and alignment with adjacent precast modules. Noncumulative dimensional tolerances for erection of fusegate modules are as follows:

a. Face width of joint

Dimension normal to joint

10 feet or under: Plus or minus 3/16 in

b. Joint taper (panel edges not parallel): 0.2 percent or 1/16 inch total, whichever is larger, but not greater than 3/8 inch

c. Module alignment

Jog in alignment of edge: 1/4 inch

Offset in face of module (exterior face unless otherwise noted):1/4 inch

d. Variation from theoretical position, any location: Plus or minus 1/4 inch

e. Deviation from plumb: 0.2 percent, 3/8 inch maximum

f. Maximum warpage after erection: One corner out of plane of other three, 0.5 percent of distance from nearer adjacent corner, or1/8 inch

g. Differential bowing or camber of adjacent fusegate modules: 1/4 inch maximum

3.1.3 Joints

Joint widths between fusegate modules shall be as specified unless otherwise indicated.

3.1.4 Protection

Protect exposed-to-view facing from staining and other damage. Do not allow laitance to penetrate, stain, or harden on exposed surfaces.

3.2 CLEANING

Clean exposed-to-view surfaces of fusegate modules thoroughly with detergent and water; use a brush to remove foreign matter. Remove stains that remain after washing in accordance with recommendations of the precast manufacturer. Surfaces shall be clean and uniform in color.

3.3 SAMPLING AND TESTING

3.3.1 Product Quality Control

PCI MNL-116 for PCI enrolled plants. Where fusegate modules are manufactured by specialists in plants not currently enrolled in the PCI "Quality Control Program," provide a product quality control system in accordance with PCI MNL-116 and perform concrete and aggregate quality control testing using an approved, independent commercial testing laboratory. Submit test results to the Contracting Officer.

3.3.1.1 Aggregate Tests

ASTM C 33. Perform one test for each aggregate size, including determination of the specific gravity.

3.3.1.2 Strength Tests

ASTM C 172. Provide ASTM C 39 and ASTM C 31/C 31M compression tests. Perform ASTM C 143 slump tests. Mold six cylinders each day or for every 20 cubic yards of concrete placed, whichever is greater. Perform strength tests using two cylinders at 7 days and two at 28 days. Cure four cylinders in the same manner as the fusegate modules and place at the point where the poorest curing conditions are offered. Moist cure two cylinders and test at 28 days.

3.3.1.3 Changes in Proportions

If, the compressive strength falls below that specified, adjust the mix proportions and water content and make necessary changes in the temperature, moisture, and curing procedures to secure the specified strength. Notify the Contracting Officer of all changes.

3.3.1.4 Strength Test Results

Evaluate compression test results at 28 days in accordance with ACI 214R using a coefficient of variation of 20 percent. Evaluate the strength of concrete by averaging the test results (two specimens) of standard cylinders tested at 28 days. Not more than 20 percent of the individual tests shall have an average compressive strength less than the specified ultimate compressive strength.

3.3.2 Rejection

Fusegate modules may be rejected for any one of the following product defects or installation deficiencies remaining after preapproved repair attempts and cleaning have been accomplished. "Visible" means visible to a person with normal eyesight when viewed from a distance of 20 feet in broad daylight.

a. Nonconformance to specified tolerances.

b. Air voids (bugholes or blowholes) larger than3/8 inch diameter.

e. Visible irregularities.

j. Visible foreign material embedded in the face.

k. Visible repairs.

l. Visible reinforcement shadow lines.

m. Visible cracks.

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DIVISION 05 - METALS

SECTION 05501

FUSEGATE METAL FABRICATIONS

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SECTION 05501

FUSEGATE METAL FABRICATIONS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A193/A193M	(2004) Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials
ASTM A 276	(2004) Standard Specification for Stainless Steel Bars and Shapes
ASTM A 449	(2004) Standard Specification for Quenched and Tempered Steel Bolts and Studs
ASTM A 490	(2002) Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(2003) Structural Welding Code - Steel
AWS A5.9	(1993) Specification for Bare Stainless Steel Welding Electrodes and Rods

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Manufacturer's catalog data shall be submitted for the following items:

Bolts and Nuts; G, DO

washers; G, DO

Epoxy-Resin Grout; G, DO

Paint; G, DO

SD-07 Certificates

Welding Procedures

Welder Qualifications

Welding Procedures and certifictes for Welder Qualifications shall be submitted in accordance with this section.

1.3 GENERAL REQUIREMENTS

The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on structural steel shall be in accordance with AWS D1.1.

Welding to or on stainless steel shall be in accordance with AWS A5.9. Welders shall be qualified for the work and positions involved and Welding Procedures and certifictes for Welder Qualifications shall be submitted prior to any welding.

Exposed fastenings shall be compatible materials, shall generally match in color and finish, and shall harmonize with the material to which fastenings are applied. Materials and parts necessary to complete each item, even though such work is not definitely shown or specified, shall be included. Poor matching of holes for fasteners shall be cause for rejection.

Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall provide strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

1.4 WORKMANSHIP

Metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed welds shall be ground smooth. Exposed surfaces of work in place shall have a smooth finish, and unless otherwise approved, exposed riveting shall be flush. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed, and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts, and details.

1.5 SHOP PAINTING

Paint- Jacking Shoes shall be cleaned and shop coated with the manufacturer's standard protective coating enamel system, sutiable for exterior exposure, unless otherwise specified. Surfaces to be finish painted shall be prepared according to manufacturer's recommendations or as specified.

PART 2 PRODUCTS

2.1 TOE ABUTMENTS

Armouring plate for Fusegate toe abutments, including parts embedded in concrete, shall be fabricated from stainless steel plates, shapes, and bars conforming to ASTM A 276 Type 304L. Welding shall be in accordance with AWS A5.9

2.2 JACKING SHOES

Jacking Shoes shall be fabricated from carbon structural steel plates and shapesASTM A 572/A572M, Grade 50 ksi, painted after fabrication. Couplers and fasteners shall be High Strength Bolts conforming to ASTM A 490.Anchor Rods shall be threaded bars conforming to ASTM A 449

2.3 INTAKE WELLS

The intake well assemblies shall be fabricated from stainless steel conforming to ASTM A 276 Type 304L. Welding shall be in accordance with AWS A5.9. Fasteners shall be stainless steel. Fabrication tolerances are plus 0; minus 1/4 inch in any single length, and minus 3/8 inch maximum variation from theoretical location.

2.4 WATERTIGHTNESS SYSTEM

Plates and fasteners shall be fabricated from stainless steel conforming to ASTM A 276 Type 304L alloy. Welding shall be in accordance with AWS A5.9. Rubber seal gaskets shall be in accordance with Section 03152 - Fusegate Watertightness System

2.5 ANCHOR BOLTS

Anchors for inlet well attachment: washers, bolts and nuts, shall be stainless steel conforming to ASTM A193/A193M, Grade B7. Anchor in formed or drilled holes using an approved Epoxy-Resin Grout system, manufactured for the usage, and complying with the manufacturer's instructions.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

All items shall be installed at the locations shown and according to the manufacturer's recommendations. Items listed below require additional procedures as specified.

3.2 TOE ABUTMENTS

Construct Fusegate toe abutments as shown, after construction of the Fusegates. Hold armouring plate so that the abutments when poured in place contacts the downstream edge of the Fusegates.

3.3 INTAKE WELLS

Install intake wells as shown. Tolerances shall be as follows:

Variation in level or grade: Plus or minus 1/4 inch in any 20 feet

Alignment: Plus or minus 1/2 inch

3.4 WEIGHING

3.4.1 Preamble

The Fusegates shall be lifted prior to the installation of the watertightness system and placement of concrete ballasts. The lifting operation will determine the weight and center of gravity of each Fusegate, and ensure that there is no bonding between the Fusegate modules and the spillway sill. The measurements from weight and gravity center of Fusegates will be used to calculate the amount of concrete ballast required for each Fusegate.

If the Contractor elects the precast option, it is permissible to perform the lifting operation either at the Fusegate Precast Plant or on site. The weighing may be done at the precast plant, provided the inlet wells are installed, and a suitable concrete foundation is provided that is capable of supporting the loads of the jacks without displacement.

The Contractor may perform the lifting operation by other methods as approved by the Contracting Officer, provided the lifting equipment turned over to the Government is suitable for future lifting operations. All lifting operations shall be witnessed by the Contracting Officer. All notes and measurements from the lifting process shall be recorded and submitted to the Contracting Officer for calculation of the weight and center of gravity of the Fusegates. The Contracting Officer will perform the necessary calculations to confirm and/or determine the amount of ballast for each Fusegate. The Contracting Officer will provide the Contractor with the calculation notes and results.

3.4.2 Lifting Equipment

The lifting equipment shall consist of 4 hydraulic cylinders, each with 100 kip capacity, connected to a manifold which is connected to a hydraulic pump. The pressure in each cylinder shall be monitored by pressure gages and controlled by needle valves. **Note: Fusegate Lifting Equipment shall become the property of the Government.**

Hydraulic Pump:

The hydraulic pump shall have the capacity to power the four hydraulic cylinders simultaneously through a lifting range of 10 inches. The pump may be powered by a compressed air, gasoline or electric motor.

Manifold:

The manifold shall serve as the control center for the jacking operation. The pump shall be connected to the manifold. Supply and return hydraulic hoses, with pressure gages and needle valves, shall connect the manifold to each cylinder.

Hydraulic Cylinders:

The dimensions of the hydraulic cylinders shall be such that they fit under the Fusegate lifting shoes. The stroke shall be 10 inches minimum.

Hoses:

The length of the hydraulic hoses shall be sufficient to connect the manifold with each cylinder. Return lines shall be easily differentiatable from pressure lines.

Pressure Gages:

Four pressure gages shall be provided on each hose to measure the lifting force exerted on the Fusegates at each jacking point. If the gages read in Tons of force, they shall be calibrated to the hydraulic cylinders to provide accurate readings in Tons of force. Each gage shall be marked to show the maximum operating pressure or force of the system. One pressure gage shall be provided at the outlet of the hydraulic pump.

Needle Valve:

Needle valves shall be provided on each inlet hose to control the hydraulic pressure in each cylinder at all times.

3.4.3 Lifting Procedure:

The four jacking shoes shall be attached to the Fusegates by means of the high strength bolts threaded into coupler nuts that are cast into the baseslab during construction. Jacking shoes shall be removed after all weighing operations are complete. The cylinders shall be positioned so that the lifting force is centered on the jacking shoe, and as close to the Fusegate as possible.

The theoretical forces to be exerted by each jack are given in the table below:

		Theoretical Force
Jacks 1 and 1' -	Downstream:	25.2 kip
Jacks 2 and 2' -	Upstream:	15.3 kip

The maximum force exerted by any single jack shall not exceed 110% of the theoretical force. Forces shall be applied gradually to each jack.

Step 1: All jacks needle valves shall be opened until a force of 12 kip is applied by each jack.

Step 2: Close the needle valves to jacks 1 and 1'. Increase the force in jacks 2 and 2' in 0.1 kip increments and inspect the Fusegate after applying each increment of lifting force.

Step 3: Close the needle valves for jacks 2 and 2' when the upstream side of the Fusegate has been raised above the spillway slab 1/8 inch maximum.

Step 4: Open the needle valves for jacks 1 and 1'. Increase the force in 1 kip increments up to 22 kip and in 0.1 kip increments above 22 kip. Inspect the Fusegate for movement after each increment. Stop jacking when the downstream side of the Fusegate has been raised above the spillway slab so that the base of the Fusegate is horizontal. Apply minor adjustments to the jacks 2 and 2'to achieve a horizontal orientation.

Step 5: Read all of the pressure gages and record the pressures to determine the lift force of each jack. When the pressure readings have been completed, the Fusegate shall be lowered.

Step 6: Open the return valves to the tank and place the pump in the neutral position. Open the needle valves to jacks 2 and 2' a small amount,

until the upstream side of the Fusegate contacts the spillway slab then close the needle valves.

Step 7: Open the needle valves to jacks 1 and 1' until the downstream side of the Fusegate contacts the spillway slab. Gradually reduce the the force in all jacks to zero.

3.5 WATERTIGHTNESS SYSTEM

The vertical seal gaskets are to be installed within 1/4 inch of plan location. Apply a thread locking compound (removable grade) to all bolts. Install seal with positive compression set to insure sealing.

-- End of Section --